

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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Flight.

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EDITORIAL COMMENT.

The Aviation Vote in the Army Estimates.

It is no exaggeration to say that the aviation vote in the Army Estimates has been given precedence by the entire Press of the country, as the matter of greatest moment in the memorandum of the Secretary of State for War. It has raised a storm of comment, and we are interested to observe that much of it has not only been unfavourable, but has, in some instances, been stringently critical to the point of abuse. It appears, therefore that the daily Press has become fairly well alive to the significance of this country's need in the matter of aerial armaments. To this belief it is shaping public opinion, which in turn will have a strong influence on the future actions of responsible ministers, inasmuch as public opinion rules the polls.

In asking for a million to be spent on aeronautics this year we were governed largely by considerations affecting the rate at which such money can ordinarily be spent through the usual official channels, and also partly by the need for obtaining unanimity of opinion in all quarters. It was a reasonable sum for which moderates and progressives alike could feel justified in making a demand. With Germany and France spending so very much more and having, which is still more important, already spent

so very much more in the past, the need for at least a million to be spent in the interests of Great Britain became a self-evident necessity requiring no further proof.

On general principles, we have had in mind the prospective division of the sum between the Military and Naval Wings of the Royal Flying Corps, the needs of the former being mainly related to capital expenditure for the purpose of placing the Corps on its proper establishment, while the latter branch of the Service most decidedly ought to spend money on the construction and testing of large airships.

We still await, therefore, as an essential link in the chain, such pronouncements on the subject as the First Lord of the Admiralty may feel disposed to make when the Navy Estimates come before Parliament. It is not commonly regarded as being in the interests of the country to disclose too many details about our naval work, but we hope that in this instance Mr. Churchill will see fit to justify by figures any optimistic language with which he may seek to satisfy the House as to the nation's security.

In our opinion, the greater importance attaches to the development of the Naval Wing, and the Press of this country would be wise in insisting on having adequate assurance that sufficient money is being spent in that direction. It stands to the credit of the country that we possess at the present time the most advanced flotilla of hydro-aeroplanes, but it would be unwise, we think, to preen ourselves too much upon this superiority of circumstance, which does not amount to very much numerically. Service aviation in this country is divided into two departments, one of which is Naval and has for its object aeronautical operations from the coast seawards. It is, therefore, only to be expected that such development as does take place on this side should be in the direction of using those "web footed" machines of which Prince Louis of Battenburg spoke a little while ago when he was pointing out to members of the Aeronautical Society the essential distinction between the requirements of the Army and Navy in the matter of flying machines.

The security of any country depends upon its command of the approaches. Hitherto, the only approach to England itself has been by sea, but now a new element has successfully been placed under man's navigation, and in common with other nations it behoves us to adapt our defences accordingly.

We have been so accustomed in this country to regard our position as singular, and to take no particular concern

about the military progress of other nations, so long as it does not affect their navies, that people in this country are a little too apt to be deluded into believing that because the aeroplane abroad is a military adjunct, it is, therefore, limited to overland operations.

Nothing could be a greater or more fundamental mistake than to associate the aerial developments in France and Germany *solely* with the military requirements of those countries. The air forces, whatever they may be, are necessarily attached to some main body in whose interests they are to operate. In this respect they are, for example, no more than an improved cavalry or an improved artillery. In their *use* they amount to this and nothing more, for which reason we fail to find ourselves in accord with a part of the policy so strongly advocated by our contemporary, the *Daily Telegraph*, in which, if we understand it rightly, a separate Ministry for the air is advocated.

In its actual use, as we have said, the airship or the aeroplane is simply an adjunct to the Army or Navy, as the case may be. It is a mere weapon, and it cannot in any sense of the word operate independently of the main fighting arm. If in the future it were to develop on such a scale as to make the air the main field of battle and transport, it would be another matter; but in the light of present knowledge, we cannot anticipate the use of any aerial fleet as more than a means to the end of opening up the overseas or overland approaches into the enemy's country. It seems to us, therefore, to be bad strategy to advocate its absolutely independent administration.

The broad question—"Should England have an aerial fleet?"—is divisible, just as is any other of its kind, into three parts, which also may be propounded as questions. One asks, first, is an air fleet technically possible? Secondly, one enquires, is it strategically necessary? Thirdly, there is the consideration, is it politically desirable?

There was a time when an adequate air fleet was not technically possible, and the other two parts of the main question required no further answer. It is surely, however, no longer tenable to argue that the technical difficulties are still such as to place either the airship or the aeroplane out of court. Some little capital has been made this last day or two out of the misfortune of the latest German dirigible. There could be no more short-sighted policy than to attempt to argue from such a mishap that we may safely let others conduct these costly experiments for a little while longer.

The real point that is lost sight of in any such suggestion is that the most valuable part of the whole business is not so much the possession of one particular airship itself as the experience that is gained in building it and in using it. It was the greatest pity that those responsible in this country did not profit by a similar misfortune that befell our own one and only large naval airship. The experience of those who had the handling of that job would have been an invaluable aid to securing of better luck next time. It is essentially those who have been associated with failure on whom one must mostly rely for carrying new work to the point of success.

So, the failures elsewhere notwithstanding, we say without any hesitation that the airship as well as the aeroplane has fully entered the realm of technical possibility, as it is implied in the question whether we can, if we will, possess an adequate aerial fleet.

The next point is the strategic necessity, and here it is that we wish to draw particular attention to the mere incidental character of the connection between the air

forces and foreign armies. The air force is, as we have mentioned, necessarily an adjunct of some main fighting body; abroad this means that it is primarily an adjunct of the army for the reason that the chief approaches between countries on the Continent lie over land and not over sea. But, notwithstanding its inseparable attachment to something greater than itself, the air force has one very important characteristic that differentiates it from other military adjuncts like the cavalry, for instance, to which it is in some respects analogous when operating over land. It operates in an entirely different medium and can move where these other units cannot go. In fine, the country that develops an adequate military air service commands also a potentially useful naval air force—and directly any form of foreign armament touches the question of naval power it affects the one thing vital to the defences of this country.

For these reasons, therefore, the answer is the affirmative one—that it is strategically necessary for the British Aerial Fleet to develop in proportion to the development of foreign air forces, quite irrespective of whether the latter are or are not developed under the *agis* of naval authority. It stands to reason, however, that in this country preference should be given to those types of aircraft best suited for operation over water.

For a power like England, the question of political desirability concerning matters touching national defence must be answered directly by the decision as to their strategic necessity. The issue has, however, been much confused by laying too much stress upon the military aspect of the foreign situation, which tends naturally to identify foreign air fleets with foreign armies, and to that extent apparently to discount their importance to the British nation.

It is, doubtless, the recognition of this amphibious character of Service flying that has led the *Daily Telegraph* to advocate a department for its separate administration. At first sight it is a plausible and, to some extent, an attractive programme. Particularly so in as much as it would place a Minister in office with a special mandate to ensure the adequacy of its immediate development. On closer and more serious consideration, however, the scheme seems to us to lose its glamour. Unsatisfactory as may be the present position in many ways, the soundest policy, we feel sure, is to work for a fuller recognition of the significance of aerial navigation on the part of the Ministers responsible for the efficiency of the Naval and Military Services themselves.

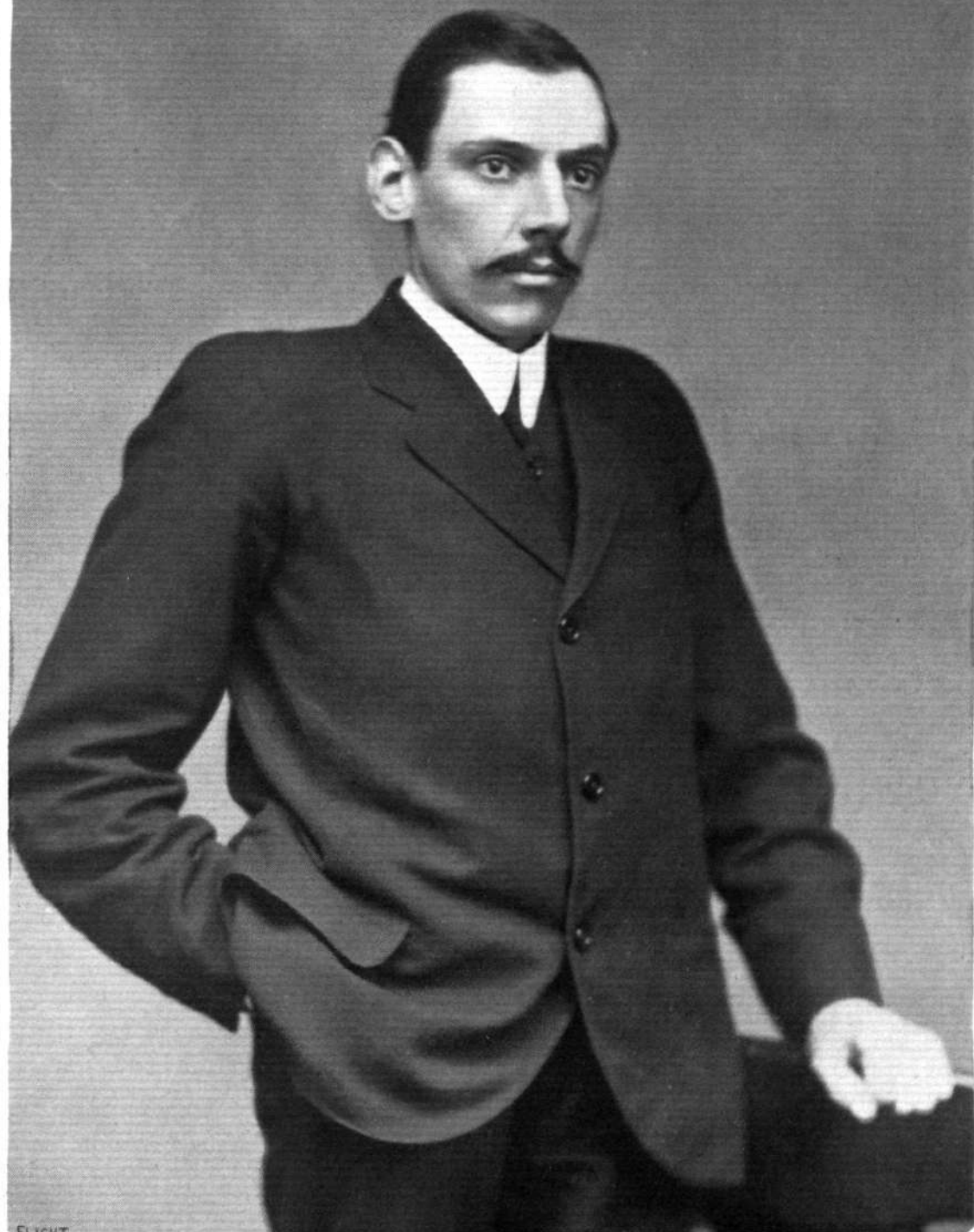
The plan on which the Royal Flying Corps is based seems to us to be admirable, and the Central Flying School, at which naval and military officers and civilians undergo a common training is an especially admirable method of establishing a very desirable friendly feeling throughout the personnel. But the separate administration of the Naval and Military Wings by the Admiralty and War Office respectively, is, we think, an essential feature in the realisation of the full benefit that the Royal Flying Corps can confer on each service.

The matter of real importance is that the public should realise, through the explanations of the Press, the essential fundamental points of the argument sufficiently to prevent any Ministerial juggling. It will not do, for example, to have the Minister for War giving cheerfully optimistic assurances that all we need by way of a Military air force are seven flying squadrons and one airship squadron to accompany our expeditionary army, while the First Lord of the Admiralty may at the same time be excusing a parsimonious vote for the Naval Wing on

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FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT.
Designer and Constructor.



MR. L. HOWARD FLANDERS.

the grounds that most of the foreign aviation development is related to military work.

Nor is the argument appreciably affected by such considerations as that hydro-aeroplanes are not built to alight on land and *vice versa*, or that rigid dirigibles are not of the kind required for an expeditionary force. The main point at issue concerns the resources of the country, and it seems time to remind those in authority that the memorandum issued when the Royal Flying Corps was about to be brought into being very distinctly specified that the development of service aeronautics in this country ought to be on such a scale as to fully absorb our industrial resources in this field.

The Minister for War and the First Lord of the Admiralty share a great responsibility between them in respect to the aviation vote, but the greater share of the responsibility falls, in our opinion, on Mr. Churchill rather than on Col. Seely. It has been laid down in respect to the Military Wing of the Royal Flying Corps that present requirements are satisfied by organising a force of an expeditionary character, and having this clearly in mind we have all along argued that the only thing to do, so far as the Minister for War is concerned, is to see that this Military Wing is brought up to its full establishment with reasonable despatch. Having regard to the nature of the requirements it is impossible that this development should progress with sufficient rapidity unless a great deal more capital expenditure is voted than has been provided hitherto, or is allowed for in the present Army Estimates.

Superficially, from the figures, it might seem that Col. Seely has played up to his part of the programme by providing half of the million demanded; but, those figures are very delusive; they do not represent the provision for the *capital* expenditure that is really needed.

An important memorandum issued by the Navy League, to which we make reference elsewhere, shows how inadequate Col. Seely's figures really are. With his vote for the establishment, in so far as it concerns income, expenditure on salaries and the like, we have no quarrel; but what we fail to find in his programme is any assurance that the transport, workshops, barracks, sheds, &c., that are needed will be provided without delay. Also, it is important that an adequate sum should be devoted to experimental purposes, which should certainly include the design, construction and purchase of larger aeroplanes than are at present in common use.

The all-important question of British-built engines is to receive some tangible recognition at last, and Col. Seely, with the aid of the First Lord, purposes to solve the difficulty by offering a prize, of two thousand pounds, we have heard it said, and in addition a guarantee to purchase fifty engines from one firm although not necessarily from the prize winner. All we have to say on this matter is that if Col. Seely has taken proper steps to assure himself in advance that his proposal will be regarded as a sufficient attraction in the right quarters, then he is making a very economical bargain. It is, however, by the result that he must be judged; that is to say, by the class and number of manufacturers who respond to his invitation to become interested in the aeronautical business.

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An Armoured Aeroplane.

THERE are many novel features about M. Blériot's latest monoplane which has been tested at Buc during the past few days by Perreyon. It is of the Canard type, with an elevator in front, and the propeller arranged behind the main plane. There is also a fish-

The Admiralty and Public Interest.

In summarily forbidding Commander Samson's lecture to the Aeronautical Society which was arranged to be held this week, the Admiralty has been true to its traditions but singularly lacking in its sense of proportion. Its autocratic manner in these things is apt indeed to appear a little ridiculous, for even stretching the imagination to the point of supposing that England's aerial progress had placed her in the position of creditable information that it would not be in the public interest to disclose, it might surely be taken for granted that so competent an officer of the service as Commander Samson would be the last person in the world to say things that might be indiscreet.

The Admiralty depends just as much as the War Office on public support in the matter of adequate funds, and when the question of armaments was on the tapis not so many years ago it was through the public interest incited by the Press that the Navy got the guns that they needed. Just at the present time, the Press is doing all it knows to encourage public enthusiasm for an adequate British air force, one part of which, and the more important part, too, will come under naval supervision. It would, therefore have been especially opportune to have had a lecture from an officer of the Navy following upon the able address by Major Sykes the other day, which unquestionably did much to interest the public in the military aspect of flying.

The War Office has indeed played a notable part in the encouragement of public interest in aviation, and it is a part for which the country may have very good reason to be grateful. The trouble in England is that the public at large is so seldom taken into the confidence of the Services, and so long as its only mental pabulum has to be derived from the optimistic utterances of ministers like Col. Seely, so long also will others like Lord Roberts find themselves expounding ideas like national service to a comparatively apathetic people. If chiefs of staff had had to report publicly on military and naval aeronautics at the time say when the U.S.A. army issued its famous tender for aeroplanes, it is unlikely that the English people would have allowed this country to have lagged so far behind as it has done in the development of an international art.

If the civilian had more opportunity of coming into contact and hearing the views of the Service officer who knows his job and on whose efficiency the nation, after all, relies, there would probably be a far greater keenness among all and sundry to expand the interest so engendered into a little practical accomplishment on their own account. The Government's policy in respect to Service aviation in this country covers, as should be well known, a scheme for a reserve of pilots, but this reserve will never be anything like what it might be unless the Government shows a far more direct interest than it has done in the encouragement of civilian enterprise. By taking the chair at meetings of the Aeronautical Society, General Sir John French and General Sir James Grierson have done a very great deal to encourage the movement, and it is, we think, a profound pity, especially at this juncture, that the Admiralty should seem so little inclined to help things forward in the same spirit.

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tail shaped rudder placed only 15 cms. behind the propeller, while there are three fish-tail shaped fins arranged at the rear of the inner half of each wing; ailerons extend from this point along the outer half. The body of the machine, which is arranged so that the observer lies flat, and looks through windows, is covered with steel plate to protect the occupants from rifle fire.

EASTER FLYING AT HENDON.

THE Fourth London Aviation Meeting, which was held at Hendon last Friday, Saturday Sunday and Monday, was a great success, both as regards the flying and in the number of visitors present on each day. Compared with the previous Easter's meeting, the weather conditions were, on the whole, not anything like so favourable this Easter, yet the exhibitions of flying that were given on the Friday and Saturday alone far and away exceeded any previous flights seen at Hendon. Although we have to record one nasty accident—described later—to that plucky young aviator, Marcel Desoutter, everything otherwise went off without a hitch, while Desoutter—the victim of one of those annoying accidents caused by an insignificant slip—is, we hear, well on the way to recovery.

What was most gratifying, however, was the number of visitors—and amongst them were to be seen a number of distinguished personages—and cars that lined the enclosures, for it must be remembered that, except for Sunday, the weather was not ideal for standing about in the open.

Friday was not at all promising, the wind and rain being simply appalling early in the afternoon. In spite of this, however, quite a number of people assembled, both inside and outside the aerodrome, and patiently braved the elements on the chance of seeing some flying. They were well rewarded for doing so, for at about four o'clock the weather cleared up a bit, although the wind still blew at about 35 or 40 m.p.h., and Marcel Desoutter ventured out on the old 50-h.p. Gnome-Blériot monoplane. He was followed by Manuel Chevillard on an 80-h.p. (Gnome) Military Henry Farman biplane, who gave an exhibition which would be impossible to describe in words. He started off with a series of zig-zag switchbacks, the biplane swaying from side to side at the same time.

He then ascended with remarkable rapidity and executed one of his astonishing dives.

This can only be described as a "side-dip" with the machine banked at about 70° or 80°. As far as one can see in the short space of time it takes for this dive to materialise, what happens is as follows: the pilot first banks the machine to about 60° and then it swings sharply round on its lower leading wing-tip until the higher wing-tip is again level with the former, the machine still diving. It appeared to the writer that during one of these dives he observed the biplane bank "beyond the vertical," only for a fraction of a second, it is true.

After two of these sensational dives, Chevillard brought the machine to earth, making a beautiful landing.

A speed handicap was then arranged over four laps of the aerodrome, between Marcel Desoutter and Chevillard. The former got 12 secs. start, and kept ahead the whole time, Chevillard only gaining about 3 secs. During the last two laps another unpleasant rain-storm swept the aerodrome, which was very trying for Desoutter, Chevillard and his passenger Capt. Tyrer. The times of the contest were as follows:—

	Start.	Handicap	Net
	m. s.	m. s.	m. s.
1. Marcel Desoutter (50-h.p. Gnome-Blériot)	0 12	7 8½	7 8½
2. Manuel Chevillard (80-h.p. Henry Farman)	scratch	7 17	7 5

The rain continued for some time, and when at last it ceased, Louis Noel brought out the new H. Farman type Grahame-White biplane (70-h.p. Gnome) and made a short trial flight. It was then that a biplane was seen amongst the clouds, approaching the aerodrome at a great speed and about 1,000 ft. up. It was Pierre Verrier on a 70-h.p. Maurice Farman returning from Farnborough. After making a circuit of the aerodrome he landed in front of the Aircraft Co.'s sheds, and as he did so the band struck up his country's anthem, and he received a great reception from all on the ground. It only took him 19 mins. to cover the thirty odd miles! which works out at a speed of over 100 m.p.h. Beyond a trial flight by G. L. Temple on his 35-h.p. Caudron biplane, this brought the proceedings of the day to a close, for a storm put a stop to any further flying.

Saturday was again very stormy, notwithstanding the promise of a fine day in the morning. By 3 o'clock a large crowd had arrived at the aerodrome, and with it the wind, which was by then quite unfavourable for racing. At 3.30, Chevillard ascended on the 80-h.p. Henry Farman biplane for an attempt at the altitude contest. He rose fairly quickly, reaching a height of about 1,000 ft. in five or six minutes. Higher he could not get, for the wind was

very strong at this height and beat him down again and again, so he gave up any further attempt and descended with one of his spiral side dives, which looked appalling at the height from which he came. On landing, it was ascertained that he had attained a height of 1,050 ft. By this time the weather was getting more and more threatening, and some excitement ensued when a biplane, flying very low, was seen approaching the aerodrome.

This was Gordon Bell and his mechanic on the new Short machine (50-h.p. Gnome) whom, as was previously announced, had left Eastchurch at 2.45 p.m. He landed in the aerodrome at 3.55, having had a terrible journey. After this, Pierre Verrier made a four-minute flight on the Maurice Farman, and a little later a plucky flight was made by Spratt on the 35-h.p. Anzani-Deperdussin monoplane. He handled this small machine in the high wind with great skill and deserved far more applause than he got.

An attempt was then made to run a speed handicap between Verrier and Chevillard, but a sudden downpour of rain settled the matter once and for all, and the machines were hurriedly returned to their sheds. The Short biplane,



Mrs. Moore, one of the *Daily Express* free lady passengers, getting into Verrier's Farman biplane for her joy ride.

however, was too late in obtaining shelter, for a terrific gust of wind came up with startling suddenness and lifted the machine right off the ground, turned it completely over and then dashed it to the ground with such force that the propeller was embedded some 14 inches in the ground. Some considerable damage was done to the machine, the tail being smashed completely. No more flying was done that day, and there were some doubts as to the chances of flying the next day, Sunday.

However, thoroughly ashamed of its behaviour the previous day, the weather was perfect on the Sunday, with the result that there was a large attendance and plenty of good flying, marred only by the accident to Desoutter at the commencement of the afternoon. Desoutter had started the first flight, and had been flying for about 15 minutes when he descended to about 30 or 50 ft. from the ground. It was at this height that the monoplane suddenly dived to earth when at the far end of the aerodrome. The ambulance corps and doctors were on the spot with noteworthy promptness, and soon had the unfortunate young pilot attended to. It was found that he had received a compound fracture of the left leg and some other minor injuries. He was removed to the hospital near by. The cause of the accident appears to be that he was reaching for the pressure-pump with his right hand when the cloche slipped from his left hand and fell forward before he could regain control. The accounts of the accident which have appeared in the daily Press are more picturesque than accurate. During the rest of the afternoon, until dusk, flight after flight was made—too numerous to give in detail here, but all excellent exhibitions; many passengers were carried during most of these flights. The pilots and machines were Chevillard on the Henry Farman, Verrier on the Maurice Farman, Georges Collardeau—his first appearance in England—on the Breguet, Lieut. Lushington on the 80-h.p. Gnome-Caudron, Lewis Turner and Temple on Caudrons, Noel on the 60-h.p. Grahame-White tractor, and Gustav Hamel on the Blériot. The latter was the sole representative of the monoplane, all the other machines being biplanes; Hamel had flown over on this machine during the afternoon from Brooklands, having taken 13½ minutes for the journey. The new Grahame-White biplane made a very promising flight, but some slight damage was done to the chassis on landing.

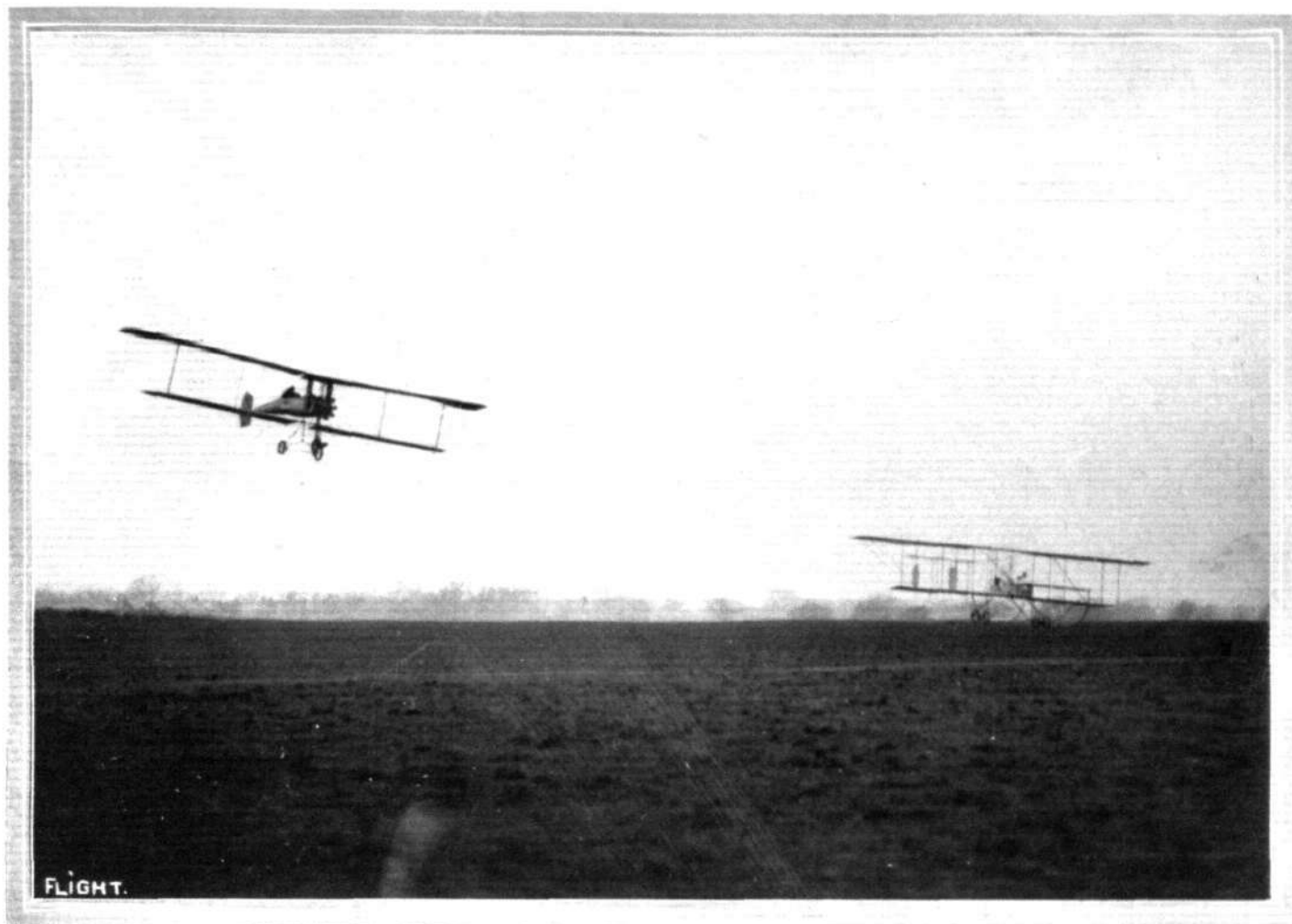
Monday's meeting was by far the best, in fact, it was one of the most successful meetings they have had at Hendon since the aerial Derby. About 20,000 people were present—the number of cars being unusually large—while large crowds gathered outside the aerodrome and on Hendon Hill. At about 2 o'clock A. Cheeseman taxied the Grahame-White 'bus (No. 7) up and down the enclosure, demonstrating the controls to the spectators, after which he made a short flight. Grahame-White then took over the same machine and also made a short flight.

At 2.30 Chevillard made a trial flight on the 80-h.p. Henry Farman, and executed one of his dives nearly over the shilling enclosure, much to their horror. After this he took up several passengers—about five altogether—while Louis Noel made a short flight on the 70-h.p. Grahame-

White biplane, and Verrier was out on the Maurice Farman banking and switchbacking after the style of Chevillard. With the two of them up together one wanted eyes on telescopic horns, like a snail's, to follow their movements. Collardeau also made a four-minute flight on the 110-h.p. Canton Unné-Breguet biplane, and Lewis Turner was out for 5 mins. on the 60-h.p. Caudron. Shortly after 3.30 the machines were lined up for the cross-country handicap, whilst R. Slack was making a trial flight on the 50-h.p. Gnome-Blériot—the same Hamel flew the day before. Six machines entered for the above event, as follows:—Lewis Turner, 60-h.p. Caudron biplane (3 mins. 30 secs. start); Pierre Verrier, 70-h.p. Maurice Farman biplane (1 min. 55 secs. start); R. Slack, 50-h.p. Blériot monoplane (1 min. 40 secs. start); G. Collardeau, 110-h.p. Canton Unné-Breguet biplane (1 min. 35 secs. start); M. Chevillard, 80-h.p. Henry Farman biplane (1 min. 52 secs. start); and Lieut. Porte, with passenger, 100-h.p. Anzani-Deperdussin monoplane (scratch). The course was to Elstree and back, and the machines remained in sight the whole time, keeping very close together. The first man back was Collardeau, with Verrier following close behind. Turner, who got in third, looked at first as though he would be the winner, for he was flying very high and could have gained a lot had he descended as soon as he got near the aerodrome. Chevillard and Porte were fourth and fifth, Slack coming in last, to the surprise of many. After this event the eight "Daily Express Ladies" were given their joy flights. This proved to be an interesting and amusing event. Chevillard and Verrier took them up one after the other in a remarkably short space of time—although the flights were by no means short. Lewis Turner also took up one, Miss Prudence O'Shea of the Gaicly. All expressed themselves delighted with their experience and wanted encores. Lieut. Lushington then made a high flight on the 80-h.p. Caudron biplane, after which a start was made for the "Express" speed handicap. This was run in two heats of six laps each, and a final of eight laps. Collardeau on the Breguet with 8 secs. start, and Chevillard flew the first heat, which resulted in a splendid finish. Chevillard never overtook his rival, in spite of his wonderful bankings round the pylons, so Collardeau won by nearly 4 secs. The second heat was flown by Turner on the 60-h.p. Caudron biplane and Verrier on the Maurice Farman. Turner got 1 min. 35 secs. start, but his engine was pulling very badly, so was overtaken on the fourth lap. Verrier "romped" home 42 secs. ahead. The final was one of the best races ever flown at Hendon. Verrier, who had 43 secs. start, banked his machine in splendid style round the pylons. Collardeau slowly, but surely, caught up his rival, so that in the last lap he almost passed Verrier at pylon No. 6; it seemed at first that the Breguet was ahead as the finishing line was approached, but, as a matter of fact, both machines passed the line simultaneously. Great was the excitement when this heat ended, but the verdict of the judges was received with good feeling, and it was decided to fly another heat of four laps to decide the awarding of the gold and



Sir Thomas Lipton is keenly interested in flying at Hendon on Easter Monday. Mr. and Mrs. Claude Grahame-White watching with him some fine work in the air.



A DEAD HEAT AT HENDON.—An exciting finish at the Easter Monday Meeting, when Verrier, on a Maurice Farman, and Collardeau, on a Breguet, crossed the line at the same time in the Grand Speed Handicap, Verrier being on the right quite low.

silver medals, the money prize being equally divided between them. In this last heat, Verrier got 22 secs. start, and won by 10 $\frac{3}{4}$ secs. A short flight by G. L. Temple on his Caudron biplane, and late in the evening, a joy-flight by Verrier on the Maurice Farman, concluded the very successful four-day meeting.



Lieut. McMullan, who has just passed his *brevet* test on the 35-h. p. Caudron biplane at Hendon.

Cross-Country Handicap (Elstree and back).

	Start.	Handicap times.	Net times.
	m. s.	m. s.	m. s.
1. G. Collardeau (110 h.p. Breguet biplane)	1 35	13 13 $\frac{1}{2}$	11 18 $\frac{1}{2}$
2. P. Verrier (70-h. p. Maurice Farman biplane)	1 55	13 22	11 47
3. L. Turner (60-h.p. Caudron biplane)	3 30	13 33	13 33

Grand Speed Handicap (final 8 laps).

P. Verrier (70-h.p. Maurice Farman biplane)	0 43	12 5 $\frac{1}{2}$	12 5 $\frac{1}{2}$
G. Collardeau (110-h.p. Breguet biplane)	scratch	12 5 $\frac{1}{2}$	11 22 $\frac{1}{2}$



The Daily Express Medals presented to the winners in the Express Speed Handicap at Hendon on Easter Monday.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, March 13th, 1913, when there were present: Sir Charles D. Rose, Bart., M.P., in the Chair, Mr. Griffith Brewer, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, Mr. A. Mortimer Singer, Mr. R. W. Wallace, K.C., and the Secretary.

New Members.—The following new members were elected:—Henri Coanda, Lieut. C. L. Courtney, R.N., 2nd Lieut. J. Crawford-Kehrmann, R.B., B.Sc. (hons.), 2nd Lieut. Roger Marshall, C. Le de Spencer Wynne Roberts, A. E. Stone, G. L. Temple, Capt. G. W. Vivian, R.N., and H. J. Whitcomb.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

- 438. Sergt. William George Stafford (Maurice Farman Biplane, Central Flying School, Upavon).
- 439. Sergt. Edward J. Street (Maurice Farman Biplane, Central Flying School, Upavon).
- 440. Lieut. Llewelyn C. Hordern (Lancashire Fusiliers) (Deperdussin Monoplane, Deperdussin School, Hendon).
- 441. 2nd Lieut. Charles G. G. Bayly, R.E. (Caudron Biplane, Ewen School, Hendon).
- 442. Eardley H. Lawford (Caudron Biplane, Ewen School, Hendon).
- 443. Sergt. H. R. Vagg (Short Biplane, Central Flying School, Upavon).

Letter from the Aero Club de France, requesting the Club to give its sanction to the issuing of an aviator's certificate to Lieut. F. L. M. Boothby, R.N., was read, and the necessary permission granted.

Annual General Meeting.

The Annual General Meeting of the Club was held on Wednesday, the 19th inst., and a full report appears elsewhere in this issue.

Committee Ballot.

The result of the Ballot for the nine vacancies on the Committee was as follows:—

Griffith Brewer.	Prof. A. K. Huntington.
Ernest C. Bucknall.	F. K. McClean.
John D. Dunville.	Alec Ogilvie.
Col. H. C. L. Holden, C.B.,	Mervyn O'Gorman.
F.R.S.	C. F. Pollock.

"The Britannia Trophy."

Mr. H. Barber has presented to the Club for competition a Trophy to be known as "The Britannia Trophy."

The rules for the Competition have been referred to the Competitions' Committee and will be issued shortly.

The British Empire Michelin Cup No. 1.

(Under the Competition Rules of the Royal Aero Club.)

The Michelin Tyre Company has presented to the Royal Aero Club of the United Kingdom, for competition by British aviators, a trophy of the total value of £500.

Annually, for five years, a replica of this trophy, together with a sum of £500 in cash, will be given to the successful competitor. This trophy will be competed for under the following conditions:—

CONDITIONS.

1. The winner for the year 1913 shall be the competitor who shall have accomplished the longest distance on an aeroplane in

flight round the course, Brooklands, Hendon, Farnborough, on any one of the following dates:—

Saturday	... April 5th	Saturday	... July 5th
Thursday	... " 17th	Thursday	... " 17th
Saturday	... May 3rd	Saturday	... August 2nd
Thursday	... " 15th	Thursday	... " 14th
Saturday	... June 7th	Saturday	... September 6th
Thursday	... " 19th	Thursday	... " 18th

If, in the opinion of the Club, bad weather has prevented the competition being held on any of the above fixed dates, the Club may add other dates instead.

2. Flights may be between 7 a.m. and one hour after sunset.
3. No replenishments of oil, fuel, etc., will be permitted.
4. No repairs may be carried out after a start has been made.
5. Competitors shall make periodical compulsory stops of not less than five minutes, with engine stopped, on completing an entire circuit of the course plus one section, e.g., starting from Brooklands the competitor would pass Hendon, Farnborough, Brooklands, and alight at Hendon. His next flight would be from Hendon, passing Farnborough, Brooklands, Hendon and alighting at Farnborough, and so on.
6. Landing at any point other than a proper landing place terminates a flight, and the competitor will then be credited with the mileage of the sections which he has completed, in conformity with the regulations.
7. A minimum distance of 300 miles must be accomplished.
8. Starts may be made from any of the three points of the course.
9. The entrant, who must be the person operating the machine, must be a British subject, flying on a British-made aeroplane, must hold an Aviator's Certificate, and must be duly entered on the Competitors' Register of the Royal Aero Club.
10. The complete machine, and all its parts, must have been entirely constructed within the confines of the British Empire, but this provision shall not be held to apply to raw material.
11. An entrance fee of £1 must accompany every notification of an attempt, and at least three clear days' notice must be given to the Secretary, Royal Aero Club, 166, Piccadilly, London, W. A competitor must further deposit a sum of £10 on account of expenses, if any, of officials. Any balance not so expended will be returned to the competitor.
12. Should any questions arise at any time after the date of entry as to whether a competitor has properly filled the above conditions, or should any other question arise in relation to them, the decision of the Royal Aero Club shall be final and without appeal.
13. A competitor by entering waives any right of action against the Royal Aero Club or the Michelin Tyre Co. for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or the Michelin Tyre Co., or their representatives or servants, or any fellow competitor.
14. The aeroplane shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claim for injury either to himself or his aeroplane, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the Royal Aero Club and the Michelin Tyre Co. in respect thereof.
15. The Royal Aero Club reserves to itself the right to add to, amend, or omit any of these rules should it think fit.

26th March, 1913.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

ROYAL FLYING CORPS.

THE following appointment was announced in the *London Gazette* of the 18th inst.:—

R.F.C.—Military Wing.—Second Lieutenant Thomas O'B. Hubbard, Special Reserve, to be a Flying Officer. Dated March 4th, 1913.

The following appointment was announced in the *London Gazette* of the 25th inst.:—

R.F.C.—Military Wing.—Special Reserve of Officers.—Evelyn Walter Copland Perry to be Second Lieutenant (on probation). Dated March 26th, 1913.

The Aeroplage Races at Berck.

THE series of races for aeroplanes (land yachts), arranged on the sands at Berck for the 20th and 21st inst., resulted in a sweeping victory for B. Dumont, on a machine of his own design, while his brother was second in two of the events. On the first day the strong wind necessitated the course being cut down from 10 to 5 kiloms., and Dumont's time was 16 mins. 30 secs., while his brother was 5 secs. slower. In the ladies' race Madame Dacher, on a Prin, was first, and Mdlle. Belhomme, on a similar machine second. The next day there were two events, a flying kilom., for which Dumont's time was 2 mins. 5 secs., and a race from Berck to Merlimont and back (14 kiloms.). Dumont's time was 53 mins. 45 secs.

ROYAL AERO CLUB OF THE U.K.

TWELFTH ANNUAL GENERAL MEETING.

THE twelfth Annual General Meeting of the Royal Aero Club was held at 166, Piccadilly, W., on Wednesday, March 19th, 1913, at 4 p.m., when a large number of members were present.

In the absence of Sir Charles D. Rose, Bart., M.P., the Chairman of the Club, the chair was taken by Mr. R. W. Wallace, K.C.

Mr. Wallace referred to the absence of the Chairman, Sir Charles Rose, who, in the interests of the Club, was in his place in the House of Commons to hear the introduction of the Army Estimates by the Secretary of State for War.

The Chairman briefly referred to the work of the Club during the past year. During the year, the Club had received an addition of 240 new members. They had, however, to deplore the losses which the Club had sustained through aviation accidents to the following members:—Mr. D. G. Gilmour, Mr. D. L. Allen, Mr. E. V. B. Fisher, Capt. E. B. Loraine, Mr. Lindsay Campbell, Mr. R. C. Fenwick, Capt. P. Hamilton, Lieut. Wyness-Stuart, Mr. E. Hotchkiss, Lieut. C. A. Bettington, Mr. H. J. D. Astley, Mr. J. L. Longstaffe, Lieut. Wilfred Parke, R.N., and Mr. Edward Petre. The circumstances attending these fatal accidents were familiar to everybody.

The granting of Aviators' Certificates, which were now recognised by the authorities, showed a steady increase; 299 were issued since January 1st, 1912, making a total of 474 since March, 1910. In view of the importance which Naval and Military Authorities attach to aviation, it was satisfactory to report that of the 474 Certificates issued not less than 230 had been granted to officers and men in His Majesty's Service.

During the year the following World's Records had been established:—

Speed	174 kiloms., 100 m.p.h.
Distance covered in one hour...	168 kiloms. 244 m.
Height	5,610 metres.
Duration... ..	13 hrs. 17 mins. 57 secs.

In Great Britain, the following British records had been established:—

Height, with one passenger, Mr. G. de Havilland	10,560 ft.
Duration, Mr. H. G. Hawker	8 hrs. 23 mins.

Of the many notable performances by British aviators during the year the most noteworthy was that accomplished by Mr. S. F. Cody, in winning the Military Aeroplane Competition against all comers.

The Committee had had an opportunity of placing themselves in direct communication with representatives of the manufacturers, with a view to ascertaining how far, and in what manner they could assist in promoting the welfare of the industry, and while the orders that were being given out by the Government authorities were, perhaps, not all that could be desired, it was satisfactory to note that a very great advance had been made in the work which had been turned out by the British manufacturers, and it was hoped that the time was not far distant when the authorities would see their way to place all orders for their requirements in Great Britain. Referring to the complaints made by Col. Seely as to the non-delivery of aeroplanes ordered by the Government from British manufacturers, the Chairman stated that the fault lay with the Government in not ordering early enough. It was not to be expected that manufacturers could be ready to supply aeroplanes at a moment's notice unless they had some knowledge of what the requirements of the Government would be.

Since the last general meeting the Club had appointed a Committee to inquire into all aviation accidents. Since its formation, this Committee had held 24 meetings and had had under its investigation 21 accidents and 10 reports had been issued. These reports were being sent regularly to the War Office, the Admiralty and the Home Office, and it is believed, were of considerable use to these Departments, not only in providing material for their own reports, but in pointing out defects in construction, which might be remedied. The good work of this Committee was evidently appreciated by foreign friends as only recently all the reports issued by the Committee had been printed in the official organ of the Aero Club de France. It was also interesting to note that many other countries had followed suit with the appointment of similar committees dealing with accidents in their respective countries. The Royal Aero Club was now making arrangements for the interchange of these reports. The special thanks of the Members of the Club were due to Col. Holden, the Chairman, and the Members of the Accidents Investigation Committee for the large amount of time they had devoted to the work, for their untiring efforts, and for the personal inconvenience to which they had in many cases been put. [The Chairman interrupted his speech at this point, and a unanimous vote of thanks was accorded to Col. H. C. L. Holden and his Committee].

The Club again had to thank those of its members who had come

forward with Prizes to stimulate the British Industry. The Michelin Tyre Co. offered two Prizes of £800 and £500 respectively, and Mr. A. Mortimer Singer, in his desire to develop the Hydro-aeroplane, had offered a £500 prize for a machine capable of landing and starting from land and water, the rules of which had already been issued.

Early in the year, the Club drew up a set of Competition Rules, which had been found to work very satisfactorily. These rules were of great assistance to the Promoters of aviation races, which were now a feature every week at Brooklands and Hendon. Both these aerodromes had rendered immense service to this country by way of educating the public in the science of aviation.

At the Annual Dinner, the Chairman of the Club referred to the question of New Premises. Many members were aware that there was a desire that facilities of a social character should be provided, which it was impossible to obtain in the present building. A Committee had been appointed some time, who had been active in inspecting various premises, but up to the present nothing that would meet the requirements and come within the means of the Club had been found. The Chairman invited the members present to express their views on this question.

Mr. Gavin W. Ralston spoke strongly on the subject of the Government's tardiness in developing aviation in the Services. It was a pressing need, he said, that the Government should be forced to move in the matter, and in order that the public should be aroused to the situation he proposed that the committee should consider the advisability of arranging a large meeting, at the Albert Hall, for example, to be addressed by the leaders of the movement. This was seconded and carried.

Re-Election of Hon. President, Vice-Presidents and Council.

On the motion of Mr. C. F. Pollock, seconded by Mr. F. K. McClean, the following were unanimously re-elected:—

Hon. President: His Grace the Duke of Argyll, P.C., K.T., K.G., G.C.M.G., G.C.V.O. Vice-Presidents: Field-Marshal The Rt. Hon. Earl Roberts, K.G., K.P., V.C., G.C.B., G.C.S.I., G.C.I.E., O.M.; R. W. Wallace, K.C. Council: S.A.I. Prince Roland Bonaparte (President F.A.I.); H.S.H. Prince Blucher von Wahlstatt; His Grace the Duke of Sutherland, K.G.; The Rt. Hon. The Earl of Hardwicke; The Rt. Hon. The Earl of Lonsdale; The Rt. Hon. Lord Howard de Walden; The Rt. Hon. Lord Kinnaird, F.R.G.S.; The Rt. Hon. Lord Suffield, P.C., G.C.V.O., K.C.B.; The Rt. Hon. Lord Montagu of Beaulieu; Admiral The Rt. Hon. Sir Edward Seymour, P.C., G.C.B., O.M., G.C.V.O.; Admiral The Hon. Sir Edmund Fremantle, G.C.B., C.M.G.; Count Henry de la Vaulx (Vice-President Aero Club de France); Sir David Salomons, Bart.; Sir Norman Lockyer, K.C.B., F.R.S.; Professor Sir William Crookes, O.M., F.R.S.; Sir Hiram S. Maxim; The Rt. Rev. Bishop Welldon; Martin Dale.

Club Rules.

The Chairman proposed the adoption of the Club Rules, as recommended by the Committee. Mr. E. V. Sassoon seconded. Mr. A. S. E. Ackermann proposed a slight alteration to the rule dealing with invalid ballot papers for the election of the Committee. This was agreed to.

Mr. Gavin Ralston proposed an alteration to the rule relating to the suspension or expulsion of members. This was agreed to.

The Club Rules, with these alterations, were then unanimously adopted.

Committee Ballot.

The Secretary read the result of the ballot for the nine vacancies on the Committee, as follows:—

Griffith Brewer.	Prof. A. K. Huntington.
Ernest C. Bucknall.	F. K. McClean.
John D. Dunville.	Alec Ogilvie.
Col. H. C. L. Holden, C.B., F.R.S.	Mervyn O'Gorman.
	C. F. Pollock.

A vote of thanks to the Chairman and Committee was unanimously carried.



A New Society in France.

At a meeting of pilots held in Paris on Saturday last, it was decided to form the Association Amicale des Aviateurs. The aim of the new body is to defend the interests of its members and to work for the formation of a volunteer air corps. M. Leblanc was elected president, Garros and J. Vedrines, vice-presidents, Martinet, treasurer, and Chambenoit, secretary. The other members of the Committee are Senator Reymond, Weymann, Molla, Fourny, Dancourt, Bregi, Giraud, Legagneux, Prevost, Guillaux, Helen, Bernard, Gobe and Champel.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

Bristol School.—Monday, last week, Merriam made two circuits for test, but decided it was too bumpy for pupils. As it was, the Bristol was the only machine out.

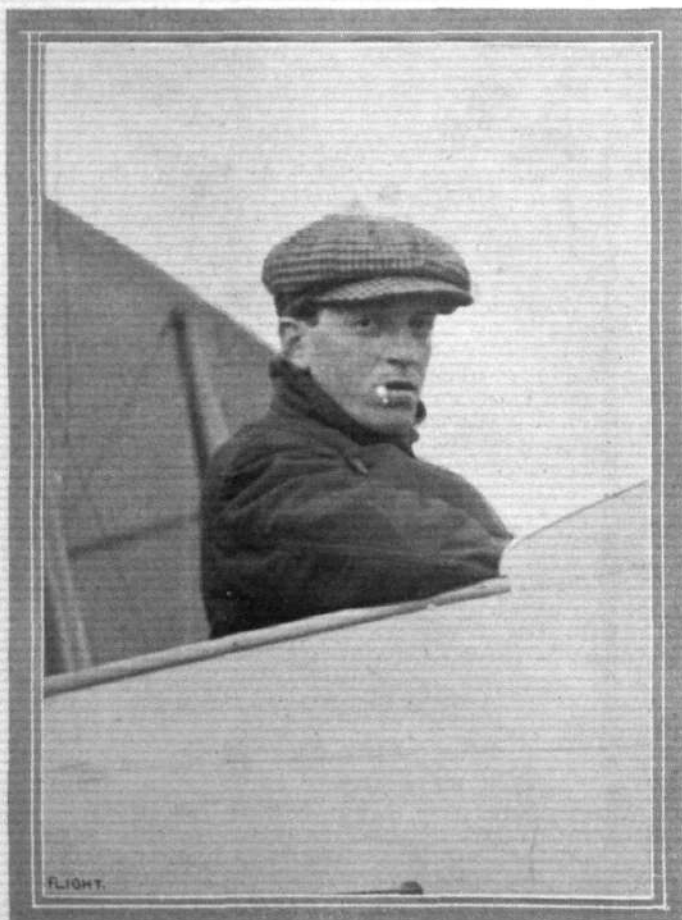
Bendall first out Tuesday, trying conditions. Merriam followed, giving Lieut. Gordon-McClellan (new pupil) his first trip up high. He enjoyed his experience, but found it very cold. Lieut. Robertson-Dobie and Blatherwick both doing figures of eight, and practising landings for their *brevets*. Bendall up with Lieut. Morgan, and then Merriam behind this pupil on straights. Later up with Lieut. Robertson-Dobie, teaching him where to turn on his right. This pupil then made a very good solo flight, and is good for his ticket on the first opportunity. Lieut. Blatherwick is also ready to try for his ticket at the first opening. Merriam and Bendall put in a solo each to finish the morning's work. During the afternoon Bendall made test, followed by Merriam giving tuition to Lieut. Gordon-McClellan.

Wednesday to Saturday no flying owing to very strong wind. On Sunday, Merriam made a test flight and found conditions none too nice. However, he gave Lieuts. Gordon-McClellan and Morgan several straight flights, it being too bumpy for pupils to go alone. For the afternoon Merriam did some solo work, and then gave Mr. Howard (prospective pupil) a trial flight, afterwards taking up Lieut. Peirse (new pupil) for his first trip; too gusty for pupils to go alone.

Eastbourne Aerodrome.

OWING to a strike on the part of the aerodrome literary staff, the doings at the school have not been reported during the last fortnight. The company beg to announce, however, that the dispute has now been settled and it is hoped there will be no further friction.

On Easter Monday an excellent day's work was put in, the weather was all that could be desired, and numerous flights were made. Fowler was out early on the Bristol and after one or two test flights started school work. In the afternoon, Second Lieut. Lerwill put up some very good flights. Messrs. Fowler and Gassler were also out amusing the spectators.



"Flight" Copyright.

M. Chevillard, who has been making such sensational flights on the Farman machines at Hendon.



"Flight" Copyright.

Mr. Manton goes aloft at Hendon other than by his usual method, viz., by the aid of a ladder at No. 1 pylon.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday, last week, weather much too bad for outside work. On Tuesday, Mr. Bayetto was out early at 7.30 a.m., doing straights on No. 2 B Monoplane, receiving instruction from Mr. Cheeseman; no other monoplane pupils having turned up, Mr. Bayetto continued making straights with good landings, and later at mid-day, when the wind commenced to get up, was just making his first turns. Louis Noel was testing a new machine which may be used for school work.

Late in the evening, at 5.30, Mr. Lan Davis, another monoplane pupil got in practice for a little while.

For the remainder of the week weather very bad for school work. On Wednesday the wind was so strong and gusty that no less than two pylons were blown over.

Blériot School.—During last week there was only one day on which it was possible for the pupils to work outside the sheds; this was on Tuesday, when M. Desoutter did several excellent circuits on No. 1 as did also Mr. Clappen. Capt. Cox was out on No. 2, and is improving in his straight rolls. Mr. Williams was also similarly employed, and has just finished his rolling practice, and made his first straight flight.

In the afternoon, Miss Trehawke Davies and Mr. Slack took out the former's 70-h.p. tandem, and after a preliminary couple of circuits and a landing *en vol plané*, made a cross-country flight, and on returning finding the engine was not receiving enough oil, wisely came down at Harlington in a very nice level field, the owner of which very kindly made the unexpected visitors welcome and lent them a barn close to where the engine was taken down during the week and found to be slightly burnt. The machine was quite ready to be flown on Saturday, but when Miss Trehawke Davies and Mr. Slack arrived in the course of the afternoon to fly back to Hendon, they were welcomed by such a storm of rain and wind that it was considered very inadvisable to return by air that day.

British Deperdussin School.—Tuesday, last week, school work started at 6.30 a.m., Mr. Hudson 5 mins. rolling and hops on No. 2. Mr. Bauman 25 mins. rolling and hopping on the same machine. This pupil is doing very well now, and both will shortly



Mr. E. H. Lawford, who has just qualified at the W. H. Ewen School at Hendon on a 35-h.p. Caudron biplane. Mr. Lawford has been practising on a monoplane as well as a biplane.

be ready for the next machine. Mr. Spratt took out the *brevet* machine for 15 mins., and again in the afternoon for 10 mins. Mr. Valazzi on same machine in the afternoon for flights of 14, 14 and 10 mins. duration, making a total time of 38 mins. Lieut. Porte made two flights on his 100-110-h.p. machine, taking up M. Vitry as passenger in one of them. The machine flies splendidly, the new engine being a great success, and very silent.

Mr. Spratt took out the 35-h.p. 'bus on Saturday for an exhibition flight in the afternoon, but found the wind too strong for the little machine and was blown down.

Lieut. Porte on Monday entered for the cross-county race to Elstree and back. He started scratch, and although he gained on all the machines and passed two he could not make up the time in the short distance.

Later on in the evening he gave a fine exhibition flight.

W. H. Ewen School.—The weather during the past week has not been favourable for pupils' flying practice, wind, rain and fog being the general conditions. On Sunday, 16th, Masti did some excellent solo and passenger flights on 70-h.p. Caudron biplane. On Tuesday, the 18th, however, the pupils were out at 6.20 a.m., and a good day's practice was put in. After test flight by Mr. Turner on the 35-h.p. Caudron, Mr. Torr had the machine to himself, putting in a considerable number of straight flights. M. Baumann, with the 28 h.p. Caudron, was instructing Messrs. McGregor, Zubiaga, Stewart and Pendlebury, all of whom were doing excellent work. After lunch all the pupils were out again, getting in further good practice. Mr. Ewen made several flights on the 25-h.p. and 60-h.p. Caudrons, and later took Mr. Chataway as a passenger. Mr. Turner was also out on the 60-h.p. Caudron.

Temple School.—Messrs. Penny, Ritchie, Vale and Lance all out on Blériot No. 2 for rolling practice on Wednesday, and Mr. Temple was afterwards up twice on the Caudron biplane. Mr. Temple also made flights on the Caudron on Sunday evening and on Monday.

Salisbury Plain.

Bristol School.—After a spell of bad weather, Tuesday turned out quite good, and in consequence the majority of the pupils were early at the hangars. Mr. Tower was first out on biplane for good solo, followed by Capt. Landon, who put up a good flight. Next Pixton took in turn Lieuts. Read and Brodrib one flight each and Lieut. Griffiths twice, all lengthy flights around Fargo. These three officers next went for their first solo, and all did excellently. Mr. Tower and Capt. Landon each for another solo. After breakfast Pixton testing air and Mr. Pashen a short solo on biplane.

Saturday, March 22nd, Pixton out on biplane testing; Lieut. Griffiths afterwards for solo on biplane. Wind rising prevented further flying. Monday, Wednesday, Thursday and Friday there was no flying, on account of bad weather.

Royal Flying Corps.—Owing to the unsettled weather there is very little to record. Most of the officers and men being away on leave for the holidays. Tuesday of last week Capt. Fox flew over from Farnborough on a new Maurice Farman biplane, doing the journey in good time. The monoplanes are being sent back to Farnborough. Several machines have been scouting around from the Central Flying School when the weather permitted. The sheds at Millball are nearly finished, and will soon be occupied.

Shoreham Aerodrome.

Avro School.—On Tuesday, 18th, Simms trying new propeller on 35 Green. Similarly in afternoon on 50 Isaacson. Found great improvement, engine turning much faster, thanks to Gaskell's tuning up. Wynne-Roberts and Hans Rolshoven, a new pupil, making good progress.

The Blackburn at Leeds.

DURING Easter week Mr. Harold Blackburn has been giving exhibition flights at Leeds. On Good Friday and Saturday he made several ascents on Mr. Foggin's new 50-h.p. Gnome-Blackburn, rising on one occasion to a big altitude. This machine climbs exceedingly quickly and shows a speed of about 60 m.p.h. At noon on Monday Mr. Blackburn made his first ascent, flying around Wakefield and the surrounding country. During the whole afternoon flying was in progress, no less than seven ascents being made by Mr. Blackburn. The final flight was made by Mr. Foggin, who mounted his machine for the first time, and made a splendid flight of nearly 20 mins. duration. He rose to a good altitude, and handled his machine in such excellent style that one could hardly believe that this was his first flight on this type of machine. On Tuesday afternoon Mr. Blackburn made a long flight on Mr. Foggin's machine. He made some very fine banked turns with his usual skill, finishing off with a neat *vol plané*. The flights were witnessed by hundreds of spectators, who were very enthusiastic in showing their appreciation of the flights of Mr. Blackburn and Mr. Foggin.



AT HENDON.—From left to right: Messrs. Renaux, Holt Thomas, and Verrier, the first and last being the famous Farman pilots.

AVIATION IN THE ARMY.

COL. SEELY'S SPEECH ON THE ARMY ESTIMATES IN THE HOUSE OF COMMONS ON WEDNESDAY WEEK.

I PROPOSE to deal with the subject under six main heads. And, first, with regard to aviation. There has arisen the most extraordinary misapprehension of our position in this matter, and that is due to two causes. The first is that the officers engaged in the dangerous business of flying have made it a point of honour that they will never allow any of their performances to appear in the Press. Consequently some most remarkable achievements, some of which I shall refer to in a moment, have passed absolutely unnoticed, and it may have been assumed, not unnaturally, that in this difficult business of flying nothing was being done. The second reason is that the whole business is in its nature or ought to be highly confidential. If any one tries to discover what foreign nations are doing about aviation he will find himself confronted with a blank wall. We have likewise endeavoured to prevent other people from finding out what we are doing, and in this matter we have received the assistance from the whole Press of the United Kingdom in refraining from publishing matters of great importance, but which obviously had better be kept secret in the interests of the State. I do not desire to dwell on the negotiations which have led up to this highly satisfactory state of affairs, but we have now got an understanding which I think does prevent information of real value to the State from leaking out by unauthorised communications to the Press. I wish to acknowledge the assistance which the whole Press of this country has given to us in this difficult matter. But that has added to the obscurity which has veiled the proceedings of our aviation system.

I hope to tell the House all that can properly be told. When I introduced the Army Estimates last year there were engaged in aviation duties 14 officers and 182 of other ranks. Of these 14, 12 were flying officers. The next step was to form the Royal Flying Corps. The Royal Warrant was issued on April 13, and the Royal Flying Corps was formed on May 13. The House will see that there has not been much time to start what was in effect a new business. The progress has been rapid. What are the statistics to-day? I exclude the Navy, which has made provision in regard to hydro-aeroplanes and in other respects, to which the First Lord of the Admiralty will refer next week. Excluding the Navy the total strength of the Royal Flying Corps at the present time is 126 officers and 620 men; and whereas we had 12 flying officers a year ago, we have 123 to-day. On the quality of these officers I hope to say a word in a moment, but the advance in numbers is no doubt remarkable and satisfactory. Of the men, we have not yet begun to train in large numbers in flying. Eight are highly qualified flyers, but for the moment we have decided, as France decided in the first instance, that the officers should lead the way, and for the present the overwhelming majority of the Royal Flying Corps actually flying are the officers of that corps. Of the 123 officers who are flyers, 45 have passed the test. This test is more exacting than that asked for from any flying officer in any other part of the world. Four of our instructors of the Central Flying School have also passed this test, and the remainder have almost passed or are now under instruction. Thirty-two have now almost finished this course, and the remaining 36 have Royal Aero Club certificates as qualified flyers, but have not yet passed through this school. So much for the numbers or the personnel.

Now I come to the *matériel*, and it is on this point that the most misapprehension has prevailed. The Army is not in possession of any large rigid dirigible balloons, not because it is feared to face the expense in the least degree, but because it was deliberately laid down from the start that the British Army at the present time does not require Zeppelins. Our Army is an expeditionary army. To use a Zeppelin for the purpose of, let us say, the reinforcement of Egypt, or the sending of a large body of men to the frontier to India, operations that are not very likely, but against which we are obliged to guard—to use a Zeppelin in these instances is obviously impossible. This gigantic engine could not be taken there, or if it could be it would be with the utmost difficulty, and the provision of hydrogen for it would be an almost impossible problem. We therefore decided that the Army should have small dirigibles, which could be packed up in boxes, put on motor lorries, or on ships, and sent wherever they are required. Those we have got. We have got exactly what we meant to have, and I may say we have now three. We intended to have two, but the Beta, the first we had, was small. The Gamma and the Delta are in possession, and the Eta, which is building, will be a duplicate of the Gamma. These dirigibles, I say without hesitation—and all who understand the matter will agree—are superior to any other kind of portable airship. They have various mechanical advantages which I do not wish to dwell upon, because those concerned believe the secret is our own, enabling them to rise more rapidly in the air, and enabling them,

above all, to avoid having to part with hydrogen when they rise, and therefore, there is no necessity for re-enforcing that hydrogen when they fall. They have these advantages, which we believe are superior to those of any other nation; but whether that be so or not, the fact remains that the particular balloon which some members of the House saw the other day is an advance upon anything which is known to be in the possession of any foreign Power. It goes at a great speed. The speed is 45 miles an hour, and for a small airship that is a remarkable thing.

Those who went to the aerial exhibition which took place the other day no doubt observed an enormous yellow object inside. That large yellow object, which was the dirigible balloon in possession of the Army, had all been packed up in small packages, put on motor lorries, and transported from Farnborough to the exhibition. We propose to continue to have these two small dirigibles. The Army has no intention whatever of embarking upon a policy of large dirigible balloons. We did not think that would be a wise policy; we do not think so now, and we have got what we intended to have. The main division between the Army and the Navy, I think, should be, in this matter of aerial warfare—if warfare there must be—that the Navy should take all lighter than air and the Army should take all heavier than air; that is to say, the Navy should have the airships and the Army the aeroplanes. That is a natural division because those who know most about it will tell you that the navigation and management of an airship are more like the management of a ship and the management of an aeroplane is more like the management of a horse. There are exceptions in the case of our small dirigibles that we pack in boxes, and in the case of the hydro-aeroplanes in possession of the Royal Navy, which are, of course, heavier than air.

I have dealt with the main line of division, and now I propose to deal with the part which is specifically allotted to the Army, namely, the aeroplanes. We propose, as I stated, to have seven aeroplane squadrons, and we intend to complete five this year. A squadron consists of three flights of four aeroplanes each, with two in reserve for each flight; that makes a total of 18 aeroplanes per squadron. This means that we shall be obliged to have, at the end of this year, 90 aeroplanes for the squadrons, but in order to make provision for the casualties, which are very numerous to the machines, although not so numerous, I am glad to say, to the men, we propose to allot 125 eventually to the military wing. We require 35 at the school. Last year, when I introduced the estimates, we had 17, but to-day we have in possession of the War Office 101, capable of flying so far as we can decide now. I am going to say what they consist of in a moment, but when I look back to the comments in the public Press during the last few weeks, I must confess that it has been with difficulty that I have restrained myself from explaining the extraordinary mistakes into which a few have fallen. We have, in point of fact, made great provision for aeroplanes. We have 101 at this moment, and if there is no further delay in supply, we shall have on May 31st, 148.

It may be asked, How does this compare with other countries? If you are to take aeroplanes in the same way as you take artillery, as being a necessary part of any army, to be allotted in a particular ratio, we have an enormous excess over any foreign Power, if you compare our provision of aeroplanes to-day. I do not accept the view that we ought to treat aeroplanes in the same way as we treat artillery, or that we should have the same proportion to mobilised strength as other nations, but if you do take that standard, and if you compare, let us say, the German Army with our own, and if you take the figures given by the *Morning Post*, of 150 aeroplanes in the possession of the German Army, and take our 100 to-day, you will find that on the basis of an aeroplane being an integral part of the army, the same as a gun, and being provided in the same proportion, taking the whole mobilised strength of the two nations, we have four times as many in proportion as Germany. If, of course, you are to take the extreme case of taking our expeditionary force, our number would be far in excess of that. It would be seven, eight, or even ten times more. But we do not take that view, because we do not believe it is a wise view to take. If we had taken that view we should have been content with 30 aeroplanes, but we have got 101, and on May 31st we shall have 148.

Mr. Lee: Of the 101 we have got now, will the right hon. gentleman state how many are monoplanes, that he does not allow to be flown, on the ground that they are dangerous?

Col. Seely: I was coming to the classification of the machines, but I will deal with the point the hon. member has raised now. Of these 101 a great many are machines of the newest type. We have this great advantage over our competitors, that we have more

new machines than any other nation, and more than that (and here I am going to make a bold statement, which I know my technical officers will support, but which the friendly rivalry of foreign countries may not accept), we have the best aeroplane in the world, and we have several of them. We have evolved a type which is far superior to that in the possession of any nation in the world. Perhaps I may be permitted to explain that.

We have been for the past year conducting experiments of a secret character, in regard to which I propose to give some of the details now with regard to the manufacture of aeroplanes. It is a most extraordinarily difficult subject. The slightest change in the structure of a wheel makes all the difference between success or failure; but we have had the best brains in England to work upon, and I wish here to acknowledge the services rendered to us by the National Physical Laboratory, and especially the committee under Professor Glazebrook, which has done so much to bring about this result. The Superintendent of the Royal Aircraft Factory, who is himself a member of that committee, has carried out the work, and nothing is known here or abroad of what has been achieved. It might be thought better to keep it to ourselves, but, with the concurrence of the Prime Minister, I think it best to tell the House what we have done. The great problem of the aeroplane for the purposes of war, and especially for this country, is to have an aeroplane that will fly at great speed and also at a slow speed; and the second is even more important than the first. The first is necessary because of the very strong winds which blow in this country, where we must practice, and if you turn to war, where you have to go up in any weather, speed is vital, so that you may get to the place where you want to go to in a contrary wind, or even a gusty wind. But slow speed is even more essential for war in this country, and, indeed, for war in all countries, because, if you get a machine, such as has been built, to fly about 80 miles an hour, and it can only land, as most of them can, at 65 or 70 miles an hour, the House will see at once that, in any enclosed country, the problem of landing is such—assuming the hedges are 150 yards apart, and the landing at 65 miles an hour—that, having to clear the hedges, you must land in the middle of the field. It may be that, flying across country with these exceptionally fast machines, to attempt to land means certain death.

So the problem to be solved was this. Could you get a machine to fly at a great speed which could also fly at quite a slow speed and yet remain in the air? We have come nearer to solving that problem than any other nation, far nearer than we ever believed possible six months ago. We have now in our possession a machine which has flown—in fact it was flying about yesterday—at over 80 miles an hour, and it can also fly at 40 miles an hour, making a range of speed of 40 miles an hour, a reduction of half—a thing believed incredible six months ago. We have also a machine which completed its tests the day before yesterday—a biplane, be it observed, which is supposed to be a slow machine. We do not know yet how slow it can fly, but we know how fast it will fly. The day before yesterday, over a measured course, very carefully timed, on a series of four tests, this biplane averaged 91·4 miles an hour, flying backwards and forwards, with and against the wind. That means that this machine attained a speed in still air, allowing for turnings and so forth, of 100 miles an hour. Those are very remarkable achievements. I need hardly say it is impossible for me to claim one tiny fraction of credit for them, but we do claim credit for British inventive skill and genius that can work quietly and silently and produce these remarkable results.

It may be said, “Can these things fly in violent winds? It is no good getting a machine that will go 90 miles an hour if, in point of fact, the violence of gusts, causing lateral and backward and forward disturbances, prevents you getting off the ground at all.” On that, too, I have some very interesting information to give to the House. The Commandant of the Central Flying School—I should say at once he is a sailor, although he is under Army orders; the Navy and the Army have worked in this matter hand in hand, that is why we have succeeded—decided that it was essential to know in how violent a wind it was possible to fly. There were many volunteers to try and see. It has been the rule of the Royal Flying Corps that nothing in the shape of spectacular flying shall ever be permitted. Not only is nothing to be said to the Press—not because we dislike the Press but because there must be no advertisement—but there must be no unnecessary risks. But this was a point of real substance and so it was tried. There were two experiments carried out. The first was this. They chose a day when the wind blew at its maximum violence. A brave young man—I do not give his name, we never give names—wished to go (others also wished to go), and he went. His machine was one which could fly, and did fly, at 57 miles an hour. That was its speed in still air. He took out the machine in this tremendous gale, with no one to look on and no one to know about this daring act except the Commandant, the time-keepers, and the other officials of the school. When the machine, facing

the wind, was let go, so violent was the wind that it rose perfectly straight into the air, and then up to 300 ft. he guided it. Then for 16 minutes he directed it straight in the teeth of the wind over a given course of 400 yards. It took him 16 minutes to cover the 400 yards, and, as the House will see, that means that the wind must have been blowing just under the speed of the machine, which was 57 miles an hour. When we think that only a year ago people hesitated to go up in winds of 15 miles an hour it will be seen how great an advance has been made, not only in the science of aviation, but by our officers in particular. Now we take the converse case, not a slow speed showing how violent is the wind ahead, but both ways. It was decided that this was of great value and that one must know whether it was possible to keep an aeroplane in the air flying, not over an aerodrome, which the Central Flying School on Salisbury Plain practically is, but over country of all kinds. There were plenty, too, who were prepared to take on this undertaking. They measured a distance to a point 21 miles away. They waited until they got a wind of great violence, a wind more violent than that of to-day. An officer, not the same officer but another, was selected to try this test. It took him an hour and a quarter to fly the 21 miles with the wind dead ahead, and it took him four seconds under 12 minutes to come back, a speed of about 115 miles per hour on the return journey. That demonstration of the power of these aeroplanes when properly constructed, and with brave men flying them, is most remarkable. All these achievements show what can be done in this difficult art.

The hon. gentleman asked me about monoplanes. If we are to classify our 101 machines we shall have to classify them in various ways. Some of them are admirable machines for instructional purposes. We have others—monoplanes which do not quite fulfil the Monoplane Committee's report—which are not machines that we should wish to employ in peace, but in war, where the other dangers are so great, one naturally would not hesitate to use a machine in order to secure the safety of the country if a sudden emergency arose, without waiting to add those special precautions which are recommended by the Monoplane Committee, and which are now being carried out. I will put it this way. The hon. gentleman wants to know what the 101 are. Suppose he said, “Can you have a review of your aeroplanes?” I could provide him with a review of 101 machines, with more than 101 men. They would stretch over a mile, and they would all be capable of going up into the air. Some of the instructional machines would not, of course, be fast machines, eminently suitable for war, but others would be very suitable for war, but involving an element of risk, owing to the special dangers which we discovered in monoplanes as the result of accidents, which we do not wish to run in times of peace. It may be we cannot make them quite safe until we have scrapped them and put others in their places.

Mr. Lee: Can the right hon. gent'lman say how many of the 101 are efficient?

Col. Seely: They are all capable of flying. It depends upon what the hon. gentleman means by efficient. They are all efficient for one purpose or another. Some of them are not fast machines and, therefore, would not be much good for the purposes of immediate war. Others would be of peculiar value for the purposes of immediate war as fast scouts. We are not at the moment using them until we have made them absolutely safe in accordance with the recommendations of the Monoplane Committee.

Mr. Wyndham: How many have you now which you would use in peace, and which at the same time would be of value in war.

Col. Seely: 101. I cannot say any more.

Mr. Wyndham: You have told us that a certain number of these 101 are machines that you would not use in peace, and all I ask is how many are there which are sufficiently safe in peace and of value for war?

Col. Seely: The right hon. gentleman will forgive me. The last thing I want to do is to evade the issue, because I believe our case is so enormously strong that I want everything to be brought out. The right hon. gentleman's point is this: How many of these monoplanes are there which we should certainly use in war but which we do not think safe enough for purposes of peace. I cannot give the exact number at the moment, but, speaking from recollection, it is somewhere in the neighbourhood of 11 or 12.

Mr. Sandys: Can the right hon. gentleman say exactly how many of these machines would be available for the purposes of military manoeuvres?

Colonel Seely: A very large number, practically all, would be available for the purposes of manoeuvres, but I hasten to add that those most useful for instructional purposes would be of less value in times of war, where they might be encountered by hostile aircraft. The machines that can fly number 101.

It will be asked: “So much for what you have done in the way of remarkable achievement; but what do you do from time to time?” I saw a statement in the Press the other day, to which

a very high authority drew my attention—that the aeroplanes at Farnborough were rotting away; and a picture was drawn of gloomy men who could not fly because they had nothing on which to fly. This is how that stands:—Since the date of the formation of the Royal Flying Corps—that is, since May 13th—and practically the whole of it has been done since August—the machines have flown for 1,550 hours, and 82,000 miles have been flown—that is more than three times round the world—by the officers who are engaged either in learning flying or in conducting these experiments. I wish now to see how dangerous this is to our officers. This is a point of vital importance. It is very unfortunate that our great success in the air has been attended by great loss of life. We have lost six valuable lives in a very short time. You may say we flew 82,000 miles, but six valuable lives were lost. If, however, you take the Central Flying School, which, of course, has this advantage, that, though it is cross-country flying, a great deal of its flying is done over Salisbury Plain, where the difficulties of landing are so much less owing to the absence of hedges, there have been 670 hours of flying since last August, and over 36,000 miles have been flown, and of serious accidents there has been not one. I think it will be a consolation to the House, though indeed, one must touch wood, to know that this difficult business can be conducted with such comparatively slight loss of life as compared with the dangers that were incident to it not so very long ago.

I have dealt with the *personnel* we have, with the aeroplanes that we have in possession, and I have indicated that we have in our judgment the best aeroplane in the world, which we ourselves have devised and can manufacture in any number that we please.

Capt. Jessel: May I ask how long it takes to manufacture one of these aeroplanes?

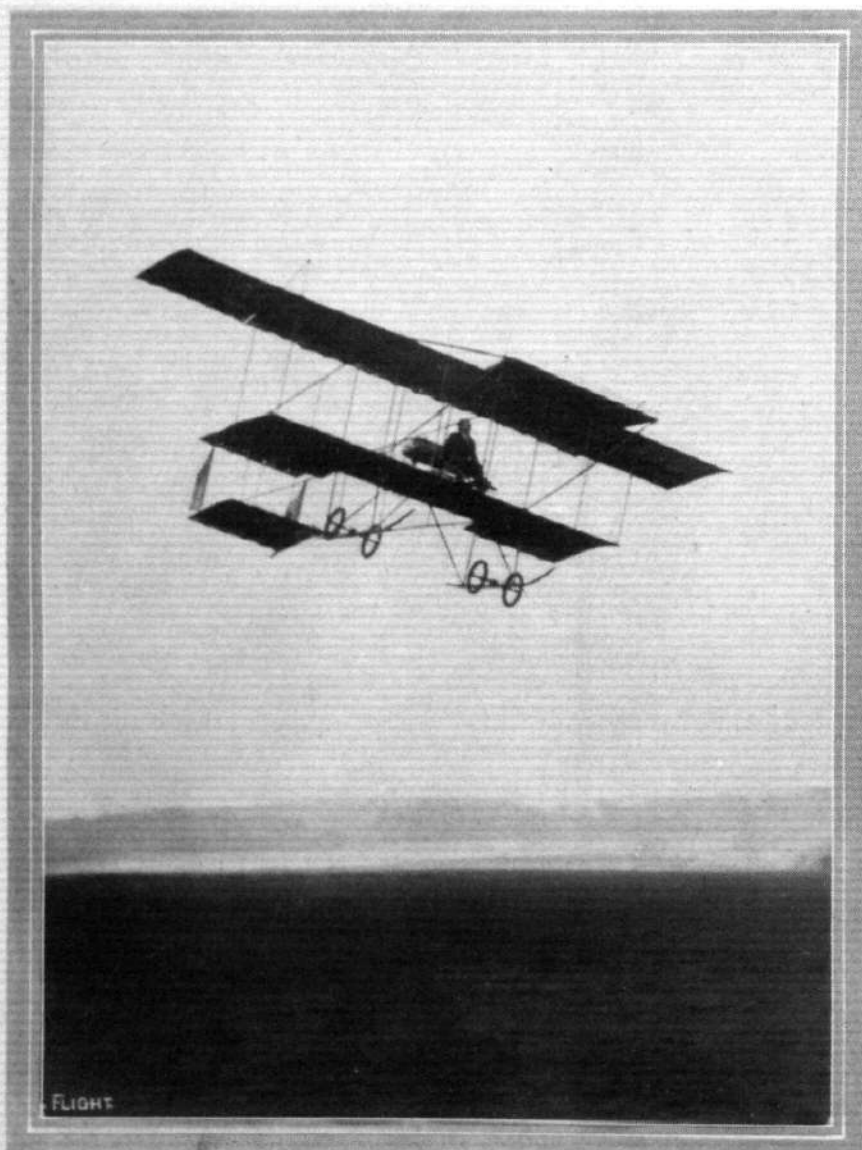
Col. Seely: A very short time—a matter of a few weeks or less. Arrangements could easily be made to manufacture a great number, far more than we should ever require, and far more than are in the possession of any other country within a short time. The difficulty with regard to aeroplanes is the engine. The weak point is that, although we have produced the best aeroplane, and although we have many good aerial engines, they are produced in small numbers, and, so far as they have yet been produced, they are less efficient—if by efficiency you mean the speed that can be obtained with a given weight—than those of foreign Powers. We have decided that the best way to meet this difficulty is to offer a prize and a promise of a large purchase. I have arranged, in conjunction with my right hon. friend the First Lord of the Admiralty, that the Admiralty and the War Office shall together offer a prize for the best aeroplane engine. Details of the competition are at this moment being settled by a sub-committee of the Air Committee of which I am chairman. We propose to give a prize of something in four figures and to give a promise of the purchase of not less than 50, possibly more, engines either to the successful competitor or one of the competitors. Those who compete will know that if a satisfactory engine is produced orders for at least 50 will follow. I am advised that is the best way of stimulating this industry. Once the matter is set going I think there can be no doubt we shall find it possible to excel in the production of aeroplane engines in the same way as we have been able to excel in the production of engines for motor cars and in the production of the aeroplane itself. It may be said, you leave all the big aircraft to the Admiralty. What about the safety of this country from invasion by hostile aircraft? What about the large number of airships of great size which may come from a hostile country? That is surely your affair at the War Office. I can only say that the whole matter is naturally somewhat confidential, and I ask not to be pressed upon it. For many months past it has been receiving very careful attention and our efforts have not been without success. With regard to the fear that the whole of our stores of explosives and cartridges might be blown up, I can only say that no Power is quite so foolish as to put all its eggs in one basket, and we have not made that mistake either. With regard to the means of meeting attack. It may be that the best way in the long run to meet attack from an enemy's aircraft would be to have another aircraft—not to meet him in the air, but to do the same amount of damage to him, that he could do to you. I leave that point to my right hon. friend, who is more fully conversant with it than I am.

With regard to the question how far it is possible for one of these large engines of war to hover over a defenceless country and wreck its brutal will upon it, I may say it has been thought that the difficulty of hitting an aerial target was very great. It was thought to be great, first, because it would be impossible to overcome the mechanical difficulties of having a real efficient quick-firing gun to fire at a really high angle. It was thought that when you get to angles of 30 and 40 or certainly 50 degrees, mechanical difficulties of vertical power would be almost insuperable, if the fire was to be accurate and rapid.

In the second place, the idea was that in the absence of anything to range at it would be impossible to hit the target. We have been conducting for a long time very careful inquiries and experiments on this question. I do not wish to go into any detail, but this much I may say from experiments I myself have witnessed—that all the mechanical difficulties have been completely solved, and that the actual difficulty of hitting an aerial target at a considerable height moving at an unknown speed and at an unknown height have been enormously exaggerated, and that everybody concerned has been surprised beyond measure at the comparative ease and the remarkable accuracy which can be attained in firing at aerial targets.

Mr. Hunt: Can the right hon. gentleman say how it is to be done at night?

Col. Seely: My hon. friend anticipates me. I was about to say it is quite clear, in our view, that any idea of hovering over a battlefield or a defenceless country by day at any height an airship can now attain must be abandoned. The hon. gentleman asks about the position at night. If we could not see the airship it would be very difficult for the airship to see us. If we could not see the



Mr. J. Alcock winning the Easter Aeroplane Handicap at Brooklands on Monday on Mr. Ducrocq's H. Farman.

airship it would be very difficult for the airship to see a particular target. Therefore I do not think we need be unduly alarmed at the possibilities of this danger. I have gone as far as I wish to go into the matter. I intended to go thus far because it is undesirable that the public mind should be excited over the dangers which may not be so great as are supposed. I have very carefully considered the exact words I should use on particular points, and I may assure the House that they are made after the fullest consideration with those who have had this very confidential matter in hand during the past few months. If I were asked why it is that we have attained such measure of achievement as has been attained in the matter of aeroplanes and aerial navigation, I will answer that the real reason is because the Army and the Navy have worked together. The statement I have made, if it comes to be examined, will show that we have made an advance without parallel in the period named. I think it will be found that in at least two respects of the nations of the world we stand first; in another respect we stand second; in another respect we stand third; and in no respect do we stand lower than third amongst the nations of the world. This result has been achieved in a short time, and it has been achieved by complete co-operation between the Navy and the Army. I hope and believe that co-operation will continue, and that as a consequence we shall be able to show a similar scientific advance in the year that is to come.

Mr. Wyndham: There was a great deal which it was desirable that we should have if they could say they were in any sense doing their duty to the country. He was glad the right hon. gentleman devoted so large a portion of his speech to aviation. Undoubtedly it bulked largely in the public mind; it created a new menace and it exacted a new sacrifice from the tax-payer, and the whole policy and bearing of aviation on warfare had to be faced and solved. The impression made upon their minds was that the Secretary for War had satisfied himself that all was well in that branch of the service. Of course they all admired the high courage and modesty of the brave young men who had gone into that branch of the service and the ingenuity of British inventors and artisans, but they were not going to be deluded into the acceptance of the assurance that all had been done in the past that ought to have been done. After careful examination they could not flatter themselves into the belief that all was being done now that ought to be done. In our defence against airships we found ourselves in the period of experiment. There was no definite statement that we had any high-angle gun now in existence or likely to come into existence to deal with airships.

Col. Seely: I expressly asked that I should not be pressed on this subject, but I may say at once we have such a gun, but in the circumstances I cannot say more.

Mr. Wyndham said he was glad to receive that assurance, or any assurance, however vague. The right hon. gentleman's reticence in this matter had been carried far indeed.

Aeroplanes were a matter of greater importance and urgency, and there again when they came to the really important fact, for all the right hon. gentleman said, we were still in the phase of experiment. Every one knew that the framework of an aeroplane could be rapidly constructed; but it was the engine which was the important matter, and we had not yet got anything like the type of engine we needed.

Col. Seely: Nor has anybody else.

Mr. Wyndham did not think it was impossible to arrive at some comparison in this matter. He could not pretend to have any official information, but he was informed on good authority that the French Government had 500 aeroplanes, and that private persons in France had 120 aeroplanes ready at the immediate call of the Government. Fifty of that total were allocated to serve outside France, and making allowance for those which were under repair, there were some 500 aeroplanes available for the French Army at this moment. It might be said, speaking in round numbers, that they would have one aeroplane to each 2,800 men. We ought to have at least the same proportion in this country and he believed that we ought to have a higher proportion than that. In view of our peculiar situation, we ought to have now 300 aeroplanes in working order instead of only 101. The War Office had not got the numbers and were still in the experimental stage. The speech of the right hon. gentleman had not removed an impression from his mind

which was created by reading the Memorandum and studying the Estimates—namely, that in the opinion of the Government nothing very unusual had happened in Europe recently which called for any special effort on their part. That opinion did not prevail outside Ministerial circles. Nobody else believed that nothing unusual had been occurring which called for special effort on their part. The true test—is the army sufficient for its purpose?—ought to be applied to every part of the army unflinchingly and with some regard to those larger considerations. Was the provision which the Government were making ample for the exigencies of the times? The War Secretary had done nothing to clear up the doubt as to whether our organization enabled our army to despatch a force at any time and to any place where the dictates of strategy might demand it. The whole point was whether our organization was capable of sending a force wherever and whenever it was wanted with the certainty of providing for home defence and maintaining that force in the field.

On Thursday the debate was resumed. Mr. Amery said the development of aerial navigation had brought into the area of warfare an entirely new element, in which there were no frontiers, and in which we might be brought into possible direct contact with at least two of the greatest Powers in Europe—France and Germany. With vital interests at stake, we had to consider, not the proportion of our aeroplanes to the Expeditionary and the Territorial Forces, but our power to hold our own in the event of conflict with either of those powers. In his speech on the previous day, the right hon. gentleman did not deal with the real point at issue, which was how soon we should be capable of holding our own at home, and in the surroundings of this country, against any possible attack. If in the course of the next few years, we proved inferior, everything might be endangered.



Merriam, during the motor racing at Brooklands on Easter Monday, flying over the course on his Bristol biplane.

Mr. Lee said he listened to the right hon. gentleman's statement regarding aviation not merely with genuine disappointment, but with deepening anxiety. It was clear, from what Col. Seely said, that the situation was far worse even than they feared. It was difficult to discover what the facts were, because the right hon. gentleman had shrouded the whole thing in an atmosphere of secrecy, which was to a large extent unnecessary. He suggested that there were vast activities in connection with the preparation of aerial plans which he was not able to disclose. It was as to these vague suggestions that there was scepticism. When the right hon. gentleman introduced his scheme in connection with this subject last March they thought it was neither adequate nor ambitious, but that it was at any rate promising, on paper. He said: "We have laid the foundation of a plan which will ensure that this country, in the long run, sooner rather than later, shall be able to hold her place in the air as she has done for centuries past on land and on sea." The right hon. gentleman told them at that time that that plan involved the purchase of 130 aeroplanes. Where were they?

The right hon. gentleman's claim on Wednesday, however, was that he had 101, and he displayed a remarkable reluctance to tell them how many were available for purposes of war. They gathered that the whole of these machines were considered as part of the available fighting force of the country. Frankly, the Opposition did not believe that. They know that 25 per cent. or more were monoplanes, the use of which had been forbidden, even for practice, by the right hon. gentleman himself. In his memorandum the right hon. gentleman only claimed that he had got three squadrons of aeroplanes, numbering 54 altogether. That was not 101, nor was it anything like sufficient. The right hon. gentleman attended a dinner of the Aero Club the other day, and made one of his absolutely baffling speeches, in which he said that our progress was greater during the past year than that of any other country in any one year. He went on to say that Providence had gifted us with immense advantages, that we had the skill and brains, and taught the whole world, and that it was to the most courageous race that victory would go.

They all knew that the young officers engaged in this work risked their lives freely in the service of their country, but those considerations were totally irrelevant to what the Government was doing to provide us with an efficient force. It would be extremely unwise to assume that we in this country had a monopoly of brains or courage in this respect. It was not detracting in any way from the gallantry of our own officers if he suggested that equal gallantry had been shown by France, which had been the pioneer in this matter.

It was claimed that there was an increase of £283,000 on the aviation vote this year for the Army alone, but whereas last year the hope was held out that the expeditionary force would have eight squadrons, they were now told that that force had only got three. The right hon. gentleman held out hopes that we might have two more by the end of this year, and presumably two more by the end of the following year. That was to say, that in order to provide even the meagre force which he considered necessary for the expeditionary army alone they had to wait till the end of next year. The expeditionary force would thus have had to wait three years for these necessary eyes. Meantime, no provision was being made for squadrons or other aerial equipment for our home defence army.

In his memorandum, Col. Seely threw a certain amount of blame for this delay on British manufacturers. They had been slow in making deliveries, and there was no satisfactory engine. How could there be, in view of the lack of encouragement given by the Government to manufacturers? The right hon. gentleman and the First Lord of the Admiralty were now going to offer a prize for engines. Why did not they do that long ago? The industry was not a rich one. It was only now, when the deficiency had been so clearly proved as to place us in a dangerous position, that that step was to be taken.

We were still conducting experiments with airships, while other nations commanded the air. Germany in the coming year was spending £1,800,000 on military and naval aviation, in addition to more than £300,000 subscribed by private persons. He did not say that we should spend as much, but the amount proposed by the Government was totally inadequate.

The Secretary for War had announced, to their great surprise, that the Army did not want any large airships. Was there any reserve to make up for wastage in war? Last summer, on the Continent, he saw a Parseval airship similar to the one which the Admiralty was buying; it was taking part in a contest with a Zeppelin airship, and was utterly powerless. It reminded him of an unfortunate grouse squatting in the presence of an eagle. The Secretary for War had said that large airships were the business of the Admiralty, which department, however, had none. He would remind the right hon. gentleman that these large airships, imperfect as they might be, had a radius of action of over 1,200 miles, which would enable an airship from the Continent to cruise practically all over these

islands and return home. It had been proved that they could drop a weight approximating a ton, and, if of an explosive material, they could imagine what would be at any rate the moral effect in a country that was in the throes of mobilisation if such airships hovered over the mobilisation centres, dockyards, magazines, and even the House of Commons. With that House under its present control, however, that would be the last place with which an enemy would wish to interfere.

The Secretary for War had said that he and his advisers had produced a new gun, about which he could tell them nothing except that it was the best in the world for attacking aircraft. Everything the right hon. gentleman produced was the best in the world, as he was the best War Secretary in the world. The right hon. gentleman boasted that his new gun would hit any airship that might possibly come within range, but the Zeppelin which he saw last summer on the Continent was practically invisible against the ordinary grey sky such as we so often had in this country. Infantry soldiers said that looking over their rifle sights they could not see one of these Zeppelins to fire at, although it was only at a height of about 5,000 ft. It was the opinion of the Secretary for War that at night, if we could not see an airship, its crew would not see us, but let the right hon. gentleman go up in one of his own Army airships at night over a dockyard working at full pressure, as it would be on the outbreak of war, with all its lights burning. In such circumstances a dockyard viewed from the sky was plainer at night than in the day.

As for the right hon. gentleman's gun, who was to use it? As a peaceful citizen he would contemplate with foreboding the possibility of the Territorial artillery being called out to shoot at the planet Venus as it hung low on the western horizon. That was the only defence which the Government were giving them except the Home Office regulations against trespassing airships.

The truth was that they could only deal with the menace of the air by counter preparations in the air. Nothing of that kind was being done by the Government on an adequate scale. The Opposition were justified in feeling real disappointment that the Government had not brought forward some substantial programme dealing with all branches of the subject. At least double the amount proposed to be spent was necessary. When the Government's arrangements had been properly examined by the country they would cause not merely acute disappointment, but indignation and alarm.

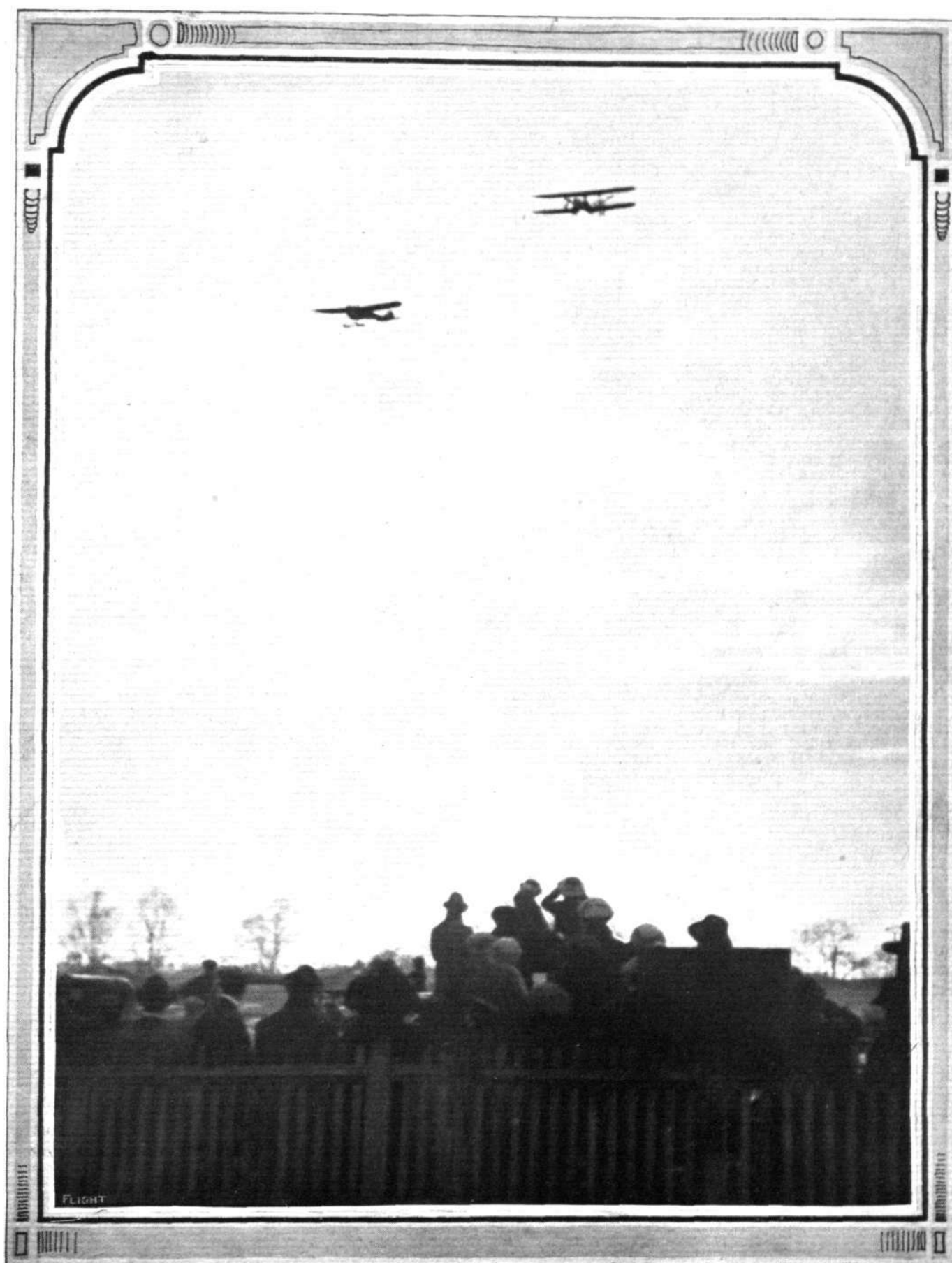
Mr. H. Baker (Financial Secretary to the War Office), replying to some of the points raised in the debate, said he thought Col. Seely's statement had given general satisfaction in the House and outside. Every one of the 101 aeroplanes possessed by the Army was a working machine, which could be used in war. They included about 25 monoplanes, which were being rapidly converted according to the recommendations of the Monoplane Committee. Objection was taken by Mr. Lee to the presence of monoplanes in the list of Army aircraft: but he must remember that the totals of France and Germany included monoplanes.

Mr. Lee: I did not object to monoplanes.

Mr. Baker, continuing, said Mr. Lee also dealt with the question of the establishment of squadrons. It was true that fifty-four was the establishment, but that was not the strength. The number of effective aeroplanes was not limited to a mere total of fifty-four. As regarded the defensive gun, he would have thought Mr. Lee would have been content with the statement of the Secretary for War that the difficulty of hitting an aerial target had been very much over-estimated. The Army had a total of 101 aeroplanes now, and within a very short time that number would be considerably increased.

Complaint had been made that they had reduced the total number of horses in the Army, and it was true that the Estimates showed a reduction of something over 2,000. There were two main causes for the reduction. One was the large reduction of transport horses in South Africa owing to the reduction of the garrison, and the other was the fact that they were gradually reducing the needs of the mounted infantry in this country.

On Monday, Mr. Joynson Hicks raised the question of military aviation in connection with Col. Seely's speech last week, and especially in relation to the question of engines for aeroplanes. The engines of English aeroplanes were deficient. Only two English manufactured engines had satisfactorily passed the test during the year. Makers of these engines had been starved for the lack of sufficient orders from the Government. The Secretary for War had not fulfilled the expectations which he held out a year ago with regard to British manufacturers. The scheme which he then outlined involved 131 aeroplanes. Had they been purchased during the past year, and was the Air Corps on a war footing? His information was that if war had broken out at any time during the past year there would not have been twenty-five efficient aeroplanes which could have been immediately used for purpose of war. In his opinion, to



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Biplane *versus* monoplane in the Easter Aeroplane Handicap for the Shell prize at Brooklands on Easter Monday.—
Mr. Barnwell, on the Vickers monoplane, passes Mr. Hawker, on the Sopwith, in the first lap.

be efficient an aeroplane must be at least as good as the French army aeroplanes; it must be capable of starting off at once, flying at least fifty miles an hour, and rising to a height of at least 3,000 ft. The Secretary for War had confused the aeroplanes on a war footing with those which the Royal Flying Corps possessed for purposes of instruction. Less than two months ago the right hon. gentleman told the House that there were twenty-six machines in flying order in the Flying Corps. Yet the right hon. gentleman now told them that he had 101 machines which could fly. They must have flown to the War Secretary.

Col. Seely: I say with full responsibility that we have got 101 aeroplanes which can fly. I understand the hon. gentleman to say that is not true. That is an unusual statement to make.

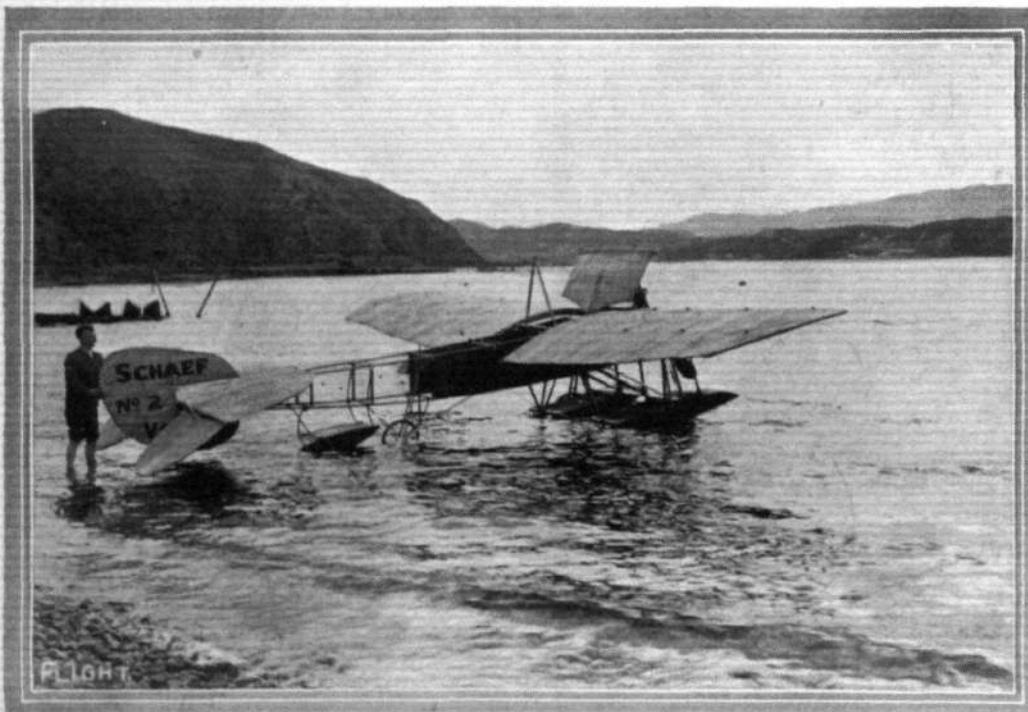
Mr. Joynson-Hicks said the right hon. gentleman might have 101 aeroplanes that could fly; so he might have 101 tomtits that could fly. What the country was concerned about was how many of the 101 aeroplanes were efficient for military purposes. He did not care how many the right hon. gentleman had in school for training purposes.

He thought the Secretary for War had decided far too quickly that the Army should not have Zeppelin airships. The provision made in the Estimates was utterly inadequate to keep us abreast of foreign countries in regard to aerial work.

Replying to the debate, Col. Seely said with regard to aeronautics, he was a little puzzled by the attitude of one or two hon. members who felt themselves unable to accept the plain statement he had made. But now they had had from Mr. Joynson-Hicks a definition as to what was an aeroplane efficient for war. Such a machine—it was stated for the purposes of the debate—must be able to fly at fifty miles an hour, rise to a height of 3,000 ft., and continue to fly fifty miles an hour at that height. He could tell the hon. member that, making every allowance and understating the figure, they were now in possession of over eighty aeroplanes to which that definition would apply. He thought they might clear away the mist of suspicion which he regretted had come into the debate,

Aviation in New Zealand.

INTEREST in aviation in New Zealand is being kept alive by Mr. A. W. Schaeff, of Ingestre Street, Wellington, N.Z., who has designed and built two machines. In our photo he is seen in his latest machine, which he has fitted with a 1912 Y type 35-h.p. Anzani engine and Rapid propeller. The machine has made several flights over the beach at Auckland, and, fitted with floats, also made by Mr. Schaeff, it has risen from the surface of the sea. The machine is peculiar in having an elevator above the pilot, working in unison with the tail elevator, and the designer claims that this arrangement ensures more lift and greater stability. Mr. Schaeff is the New Zealand agent of the General Aviation Contractors, to whom we are indebted for the photograph.



Mr. A. W. Schaeff's hydro-aeroplane.

because there need be no suspicion about it. They had been working up to securing over 150 aeroplanes by May 31st, but they had had great difficulties owing to delays. He imputed no blame at all to the manufacturers, because, in this new industry, there had been difficulties and delays in all countries. There had been great delay, especially, in securing safety.

The position was this, that, working on the programme laid down some time ago, by next Monday we should have added a further twenty-six aeroplanes, all of which would be far above the standard laid down by Mr. Joynson-Hicks. In the course of the following eight weeks a further twenty-one aeroplanes would be added. If the deliveries were made we should have, on May 31st, 148 aeroplanes, of which at least 130 would be up to the standard referred to. He did not say that was adequate, because we were getting more. But to say the country was filled with amazement and indignation with regard to our position in reference to aircraft was a misuse of words.

The people who had worked in this difficult business of aeronautics had worked very hard indeed, and to have made the enormous increase that had been attained in material and in personnel, from twelve to 123—an increase of over 900 per cent. in men who could fly, and who were expert fliers, and to have increased from seventeen to 101 machines already, and within a few weeks to 148, reflected great credit, not on him, but on those who had worked under him.

Mr. Joynson-Hicks: Are they ready to start for war in a reasonable time?

Col. Seely said the eighty machines were ready to go, and would fly at fifty miles an hour.

Speaking for the Army and the whole of his expert advisers, the War Office had no intention at present—whatever might happen in the future—of getting a Zeppelin. All his expert advisers agreed that for the Army to get a Zeppelin for the Expeditionary Force would be a much more foolish proceeding than to throw the money into the sea. It was impossible to manage a rigid balloon unless they had a proper shed, into which it could be placed, and the Expeditionary Force could not put up a shed at a moment's notice.

Col. S. F. Cody as a Passenger.

THE new Cody biplane obtained by the Royal Flying Corps was being tested at Farnborough on the 18th inst. and Col. Cody enjoyed a ride in the passenger's seat, the pilot being Lieut. Harrison.

Some of the Government's 101 Aeroplanes.

INCLUDED in the number of effective machines, owned by the Government, referred to by Col. Seely in his speeches in the House of Commons recently, are several which have done good service at Hendon and elsewhere, and we congratulate the Grahame-White Aviation Co. on having done such good business with the Government. Among the machines which have been purchased are the famous 70-h.p. "Wake Up England" Farman machine, an 80-h.p. Farman, a 70-h.p. Grahame-White biplane, the 50-h.p. Grahame-

White, two of the new popular type 35-h.p. Grahame-White biplanes, and the 70-h.p. Nieuport flown by Mr. Grahame-White in America.

Col. Cody and Catching Airships.

SPEAKING at the Institute of Inventors the other day, Col. Cody referred to a scheme for attacking airships from aeroplanes at a greater altitude, by means of an explosive hook. Referring to his early experiments, Col. Cody spoke of a kite in which he fitted an engine and propeller and which our present King tried to hold back when the engine was going. It was, he said, a reminder of this incident which caused the King to laugh so heartily on the Cody stand at Olympia.

An Aeroplane for Premier's Son.

WE learn from the Twining Aeroplane Co., of Grosvenor Road, Hanwell, W., that they have just delivered a handsome model of the Houlberg hydro-aeroplane to Master Anthony Asquith, the son of the Prime Minister.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

The Silly Ants. A Story.

ONCE upon a time a colony of ants lived upon the shore of a big lake. They were a very fierce kind of ant, with fair hair on their bodies, and were for ever fighting with the other ants that lived around them. They would fight each nest in turn, or several together, and when they beat their neighbours they would turn them out of their hill, and some of them would live there instead.

Out in the lake there was a nice little island, not much larger than a good sized ant hill, on which a colony of dark-haired ants had made their home.

How they ever got there was strange, because ants cannot swim, and there was no other way. This very fact made this island a splendid place on which to live, because these little ants could go to sleep at night without any fear of being set upon.

Now these fair-haired ants wanted this island for themselves, and one day they hit upon a plan, and floated across on little pieces of bark from the trees. The dark-haired ants met them on the shore and fought fiercely, but were beaten, and the victors took their island, and lived there for hundreds of years.

They were not afraid of other ants coming over on bits of wood, because they were very wise ants (in those days), and got much larger pieces themselves, that would carry hundreds of them, and if ever the others tried to steal their island, they would sail out and fight them to death on the lake, and they never got near the land.

Now, these ants on the island, by reason of their security, got very careless, and thought that no other ants could ever hurt them, but the others on the main land were for ever scheming to find some way of getting that island, and one day they started flying about in the air on the seed pods of the sycamore, which was much better than floating on the water, because they could sail over the water so high that the others could not get at them to fight.

Now, the ants on the island knew perfectly well what the others were doing, and could have had plenty of sycamore pods for themselves, but —

Sun Gap.

During the army trials on Salisbury Plain last August many of you may have noticed, in reading the papers, mention of Sun Gap. You would probably read that so-and-so after making a grand flight finished with a fine *vol plane* through Sun Gap, and I have often wondered how many people know the reason for the name. Of course, those who had the planning of the sheds on Lark Hill know all about it, and it will be of no interest to them to read about it here, but often one gleans little things of interest which are well worth passing on to others who are not in a position to otherwise know anything about it, so for the benefit of those who have not been to Salisbury I will explain, as I think it is quite an interesting little story.

No doubt you have all heard about the yearly excursions to Stonehenge in order to witness the sun rise on midsummer morning. Many may know what happens, and some may not, but it is this. Whether by accident or design (the latter is taken to be authentic) the stones which form the outer circle are so placed that a kind of arch is formed by three of them, and some distance away and outside the main circle is one solitary stone standing upright. In the centre of the ground enclosed by the circle of stones is one flat stone which is believed to be the altar stone, and on one day only in the year, midsummer day, does the sun rise in such a position as to cast the shadow of the solitary stone through the arch directly across the altar stone. If you were at Stonehenge on this morning you would see that the sun rises directly over Lark Hill, about two miles away, and shines through the gap left between the sheds, which was left on purpose to avoid spoiling the effect of this beautiful sight.

Where the Englishman is Wanting.

There is a word in the English language which, next to health, makes for success in all things; that word is enthusiasm, which must not be confused with hysteria. We have been described as a slow-going, sober-minded nation who take our pleasures sadly, and no doubt to some extent this is true. Stolid is perhaps the word that describes us better than another. It must not be supposed that we are disinterested in the things that matter, but we have a way of taking fortune, good or bad, in that quiet reserved manner that can only be described as English. This was very apparent during the South African war, when reverse after reverse overtook our brave troops. Where other nations would have gone crazy and have demanded all sorts of alterations and "retirements," we took it all with that solid stolidness which is our national trait and pleasure, and left our

army to fight through to success in their own bull-dog manner, which we knew all along they would do. But I do think that in some things it would be of benefit to us as a nation if a little more enthusiasm could be instilled into our life. The world moves on well-greased wheels these days, and we are very likely, if we are not careful, to misjudge the pace and come rolling along in the wake-dust of the car in front, which car is meanwhile taking the hill ahead on top gear. "It ain't that I don't know my books, they won't keep in my head," says the old rhyme, and it isn't that we don't know what is wanted; we know quite as well as the next man, and we'll do it right enough to-morrow or the next day; but, as I say, the world moves fast now, and there is no time to wait until to-morrow. When we are following the car in front, and the dust becomes a trouble to us, we push out and get ahead; but so long as the other fellow makes no dust or causes us unpleasantness we are content to follow behind, and only show him our heels when we have to. But some of the cars are as fast as ours, and we can't get in front, and then we wish we had got there at the start.

I know this is all very sober and serious, but sometimes a little quiet thought does one good.

Marked Landings.

Not so many years ago, when motors first began to run over our roads, each one had to be preceded by a man with a red flag. This, of course, was simply an extension of the old traction-engine laws, and when motors became general was done away with. I was thinking of this a few days ago when taking a run down to Princes Risborough for the Essex Motor Club hill climb. I could not help contrasting it with the way the comfort and convenience of the motorist is provided for to-day. The familiar discs and triangles together with notices of "school" and "dangerous corner," crop up almost every few yards, whilst the neat R.A.C. man is there at the corner or comes riding along ready with help or information. It was quite usual in those days to smile at the contraption that came puffing along, to peter out on the first hill and be towed home by our old friend the horse, but things have altered since then, and I have no doubt it will be much the same with the aeroplane.

One of the most difficult things to reckon with in cross-country flying is the question of landing places when it becomes necessary for the pilot to come down for adjustments or repairs, and I cannot help thinking that in the future this will be provided for, and a great load taken off the mind of the pilot. It is most difficult when at a good altitude to judge of the suitability or otherwise of a prospective landing place. It may be a green meadow of quite a good size and from above look an ideal place, and the pilot proceeds to plane down, and it is only when quite near that he finds that owing to ditches, fences or some other obstacle, it is quite unsuitable, and it is then very hard to get up again in order to try somewhere else, and in some cases of urgent necessity it is not possible to further postpone the landing, when the best must be made of it, and the best is generally a smashed under-carriage at the very least. When a pilot once gets away from the familiar aerodrome he is all at sea as to where he shall land in the case of necessity, and his best comfort is not to think about it till he has to.

All this leading up to whether something might not be done by our own R.A.C. in the way of marking suitable landing places in some way so that pilots may know from above that, at any rate so far as the particular spot is concerned, the surface is all right. I do not know quite in what way this could be done, and am content to leave it in better hands; but at least over usual routes at present, say Hendon to Brooklands and Eastchurch, with, perhaps, an extension to the coast for Channel flights, would be a good start. A post with a large white flag would not cost very much, and would indicate to a harassed pilot that here he may safely come down, and could be seen from a good distance. I do not mean that these places are wanted for use as regular landing places, but only in cases of urgent need; and I do not think many landowners would object, in the interests of human life, to having one of these signs placed so that it could be seen by a fellow-being in distress, and perhaps fighting for his life, hoping that some particular part will hold out long enough for him to find a landing. Meanwhile precious moments are wasted flying round looking for a spot, which perhaps is quite close all the time, if he only knew it.

At the altitude a machine generally flies when on a cross-country trip, it would not take many flags to cover quite a long way. I am afraid this idea is rather crude, but I offer it in all its nakedness for what it is worth, and if it only starts a train of thought towards a goal altogether different to the one suggested in the minds of those better able to carry it out in the concrete, it will have served a good purpose.

BRISTOL AERO CLUB.

IN the absence of the President, Sir George White, Bart., who is on the Continent, Mr. Samuel White, Vice-President, took the chair at the annual general meeting of the Bristol and West of England Aero Club on the 18th inst.

A letter was read from Mr. Alan Jenkins expressing regret, through ill-health, at not being able to attend the meeting. Mr. Jenkins reminded the meeting that he resigned the position of hon. secretary in January last, owing to health reasons. He stated in his letter that if his successor would care to carry on the clerical duties from his office, he should be only too pleased to render all the assistance he could, and in that way he should still keep in close touch with the doings of the club.

The Secretary's report showed that the Club had had a very active season, while the model section had more than justified its formation by its success. He regretted to have to report that the membership was falling off.

In moving the adoption of the report and accounts the Chairman said that when they came to remember that the history of aviation in our Empire was included in the last three years at most, so far as the advance made by themselves was concerned, he thought there was very good reason to be gratified and, in a degree satisfied with what had taken place. When the club started the whole aspect of aviation was quite different to what it was to-day. They started the club because they felt that the trend of matters was going to be first and foremost along the lines of sport. Instead, however, aviation had settled down more on commercial lines, prompted almost the world over by the military and naval neces-

sities of the case. All the development that had taken place was due primarily, and almost entirely, to the urgent need of making provision for aerial defence. As usual, England was the last in the race, and but for the patriotic efforts of men who had put their backs into the business, England would indeed be in a very sorry position. Mr. Haldane, when War Minister, said the Government were rather disposed with regard to the development of aeroplane construction and inventions to leave matters in the hands of private enterprise. That was what had been done ever since. But for the definite steps in development which had been effected by people interested commercially, the Government of our country, whether in connection with the military or the naval side of affairs, would to-day be in an altogether belated position compared with other nations. This year everyone reasonably expected that the Estimates would make provision for a wider and more comprehensive scheme. Instead, however, they could not blink their eyes to the fact that they were still going to muddle along and deal with the subject in the same half-hearted fashion which had characterised matters in the past three years.

The report and accounts were adopted, and an honorarium of twenty guineas was voted to Mr. Alan Jenkins for his work on behalf of the club.

Sir George White, Bart., was re-elected President, Messrs. Samuel White, Stanley White, and Weston Stevens, Vice-Presidents, Mr. H. G. Doggett, Solicitor, and Mr. H. W. L. Harford, Hon. Treasurer. Mr. P. A. Thompson was appointed Hon. Secretary in the place of Mr. Alan Jenkins, resigned.



The Aeroplane Handicap at Brooklands.

ALTHOUGH the result of the aeroplane handicap held in connection with the race meeting at Brooklands on Monday last was not particularly exciting, it produced some good flying. There were six competitors, and the result was a win for J. Alcock on Mr. Ducrocq's H. Farman biplane. Receiving a start of 5 mins. 25 secs., he finished first in 20 min. 40½ secs., and thus secured the prize of fifty guineas offered by the British Petroleum Co. A. Knight on the Vickers-Farman biplane won the second prize of £25, and H. G. Hawker on the Sopwith with 40-h.p. British-built A.B.C. engine was third. Barnwell on the Vickers monoplane who was scratch, finished third, but was disqualified for passing the pylon on the wrong side. The other competitors were F. W. Merriam on a Bristol biplane and Herbert Spencer on his biplane.

A New British Prize.

A PRIZE, to be known as the Britannia Trophy, has been presented to the Royal Aero Club by Mr. H. Barber. The regulations for the competition are now being considered by the competitions committee of the club.

Winds in Free Air.

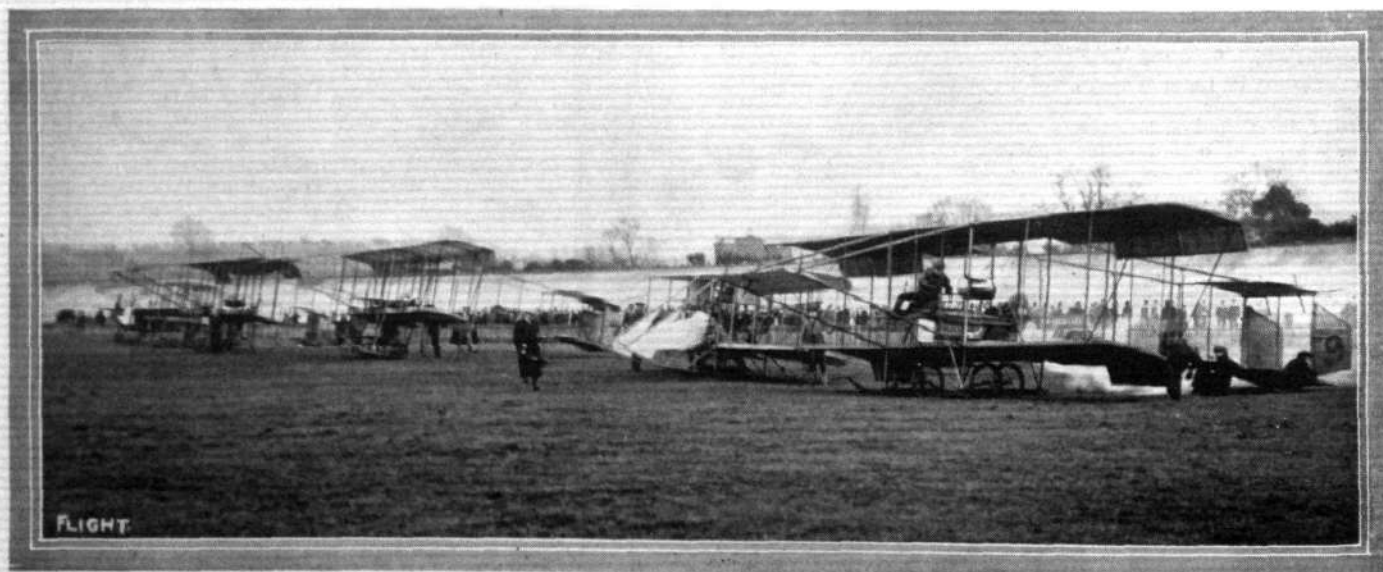
ON Friday evening, April 11th, at 9 p.m., Mr. Charles J. P. Cave, M.A., will lecture before the Royal Institution, at Albemarle Street, Piccadilly, W., on "The Winds in the Free Air."

The British Michelin Cup No. 1.

FOR this year the British Empire Michelin Cup No. 1 will be competed for over the Brooklands-Hendon-Farnborough course, and the minimum distance is 300 miles. It will be seen from the rules, which are given in full on p. 356, that trials may be made on certain Thursdays and Saturdays in April, May, June, July, August and September. After each four stages, competitors must make a stop of at least five minutes.

New Quarters for the R.F.C.

NEW barracks, capable of housing 500 officers and men, are being put up for the Royal Flying Corps on Farnborough Common, and it is expected that they will be ready for use by next autumn. Meanwhile, £10,000 has been spent on a new range of hangars and workshops on Jersey Brow, which have been put up in the record time of six weeks.



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The start at Brooklands for the Easter Aero Handicap, which was secured by Mr. J. Alcock on Mr. Ducrocq's H. Farman biplane.

NAVY LEAGUE AND AVIATION.

THE following memorandum on the subject of aerial defence has been submitted to the Prime Minister by the Aerial Defence Committee of the Navy League:—

In the opinion of the committee an examination of the present condition of this country as compared with Continental Powers with regard to the provision of aircraft for the purposes of defence reveals a measure of inferiority which, in the judgment of the committee, calls for the earnest and immediate attention of his Majesty's advisers.

The committee, after most careful consideration, advocate, as a moderate proposal, that a sum of not less than £1,000,000 sterling—as set forth in the schedule attached hereto—to initiate a definite national policy for aerial defence should be provided at once.

The committee strongly maintain that adequate preparation of efficient aircraft, including airships and aeroplanes, with the necessary personnel and equipment for the purposes of defence, is of such gravity that it brooks no delay.

In order to indicate to his Majesty's Government possible outlines of a workable policy the committee present the following proposals:—

1. The provision for the immediate construction of airships and airship stations as the nucleus of a fleet of dirigible balloons, with adequate provision of aeroplanes, hydro-aeroplanes, and all essential equipment, as a concrete part of naval defence organisation.

2. That immediate steps should be taken for the promotion of such scheme of organisation as will bring the aeroplane squadrons of the military wing of the Royal Flying Corps to the full strength of their establishment (material and personnel). As the number of aeroplanes allowed for in the establishment to replace those broken in service is quite inadequate, at least 100 per cent. over and above those already allowed for in the full establishment are required.

3. In order to provide for the expansion of our aerial defence it is necessary to establish a healthy industry in this country, so that it may supply material in case of need. To do this the makers of aeroplanes and hydro-aeroplanes must be assured of continuity of orders. In order to encourage development in aeroplane designs, an expenditure is urged of a definite sum of money annually in the purchase of experimental types for war purposes.

On Tuesday a statement prepared by the Aerial Defence Committee appointed by the Navy League and circulated for the information of Members of both Houses of Parliament, Presidents of Chambers of Commerce, and Lord Lieutenants of Counties, was issued to the Press. It reads as follows:—

1. The rapid and efficient development of aircraft for the purposes of defence and for general use in war is the most startling feature in the recent progress of Naval and Military organization at the instance of at least five great European Powers.

2. The preparatory measures undertaken by the British Government have been up to the present of such meagre character as to be practically negligible in any estimate made of comparative Air-Power with other nations.

3. The view entertained by Continental strategists in respect to England's position as an Air-Power may be gathered from the observations of Captain von Pustau in the *Tägliche Rundschau*:—

"No country has forfeited so much of its military position through the advancing improvement of Aerial Craft as the Island Kingdom of England. Its otherwise all-mighty Fleet is powerless against our Zeppelin and Schütte-Lanz Airships, and what is still more bitter, it has nothing similar to oppose to their possible attack, as the French have in their Flying-Machine Squadrons."

This comment of a German officer is submitted to the earnest consideration of the British people.

4. There can be nothing more clear, nothing more convincing, than the fact that the modern dirigible is now a powerful weapon of destruction in war quite apart from its invaluable aid in scouting and observation.

5. The importance which attaches to the construction of airships as a part of active defence organization will be understood from the direct interest taken by the German Government in the private production of these vessels. A special subsidy has been provided for the Zeppelin Company, the Government retaining control of output and forbidding any orders being executed for foreign countries.

6. Tables are presented hereunder showing the comparative air-power of nations comprised in the Triple Alliance and Triple Entente so far as information has been available, but it will be obvious that absolute accuracy is impossible on account of the secrecy which surrounds the air construction programme of Continental nations.

4. In addition to the requirements of the foregoing paragraphs, it must be understood that as the production of aeroplane engines is of fundamental importance, and as a satisfactory engine takes considerably longer to produce than an aeroplane, it is urged that firm orders for such engines should be placed with British manufacturers during the forthcoming financial year as would make this production a manufacturing possibility. The committee recognise that the number purchased may be in excess of immediate needs, but it is strongly felt that by this means only can an adequate inducement be given to firms who are obviously in a position to supply the best brains and organisation.

5. The committee urge the conduct of extensive experimental work of every kind concerning the production of defence aircraft.

The committee earnestly hope that no time will be lost in giving effect to these recommendations by his Majesty's Government.

Suggested Expenditure.

Schedule, submitting heads upon which useful and necessary expenditure upon preparation for aerial defence should be immediately employed:—

Aeroplanes to replace those used up by five squadrons, on basis of one for one	£	120,000
Transport for five squadrons	...	120,000
Permanent squadron headquarters, including erection of barracks, aeroplane sheds, workshops, and vehicle sheds, at £50,000 per squadron of five...	...	250,000
Workshops depot	...	25,000
Four large rigid experimental dirigibles	...	200,000
Three double sheds for dirigibles	...	150,000
Hydrogen (three stations)	...	60,000
Hydro-aeroplanes	...	100,000
Royal aircraft factory (experiment only)	...	100,000
Land for aeroplane sheds	...	30,000
Aerodromes at £1,000	...	6,000
		1,161,000

TABLE A.—The Triple Alliance.

(a) AIRSHIPS OWNED BY GOVERNMENT.

GERMANY.		AUSTRIA.		ITALY.	
Airship.	Hydrogen capacity.	Airship.	Hydrogen capacity.	Airship.	Hydrogen capacity.
	c. ft.		c. ft.		c. ft.
1. Zeppelin IV	776,000	Astra I ...	300,000	Military III	150,000
2. Zeppelin ...	706,000	Astra II	300,000	Military II	147,000
3. Schütte-Lanz	688,000	Hallborn	247,000	Military I	120,000
4. Zeppelin ...	627,000	Astra III	131,000		
5. Siemens ...	529,000	Kortling	118,000		
6. Zeppelin ...	423,000	Parseval...	65,400		
7. Suchard ...	414,000				
8. Parseval ...	353,000				
9. Do. ...	282,000				
10. Gross ...	247,000				
11. Do. ...	183,000				
12. Do. ...	183,000				
13. Parseval ...	141,000				
14. Zeppelin ...	750,000				
	6,302,000		1,161,400		417,000

(b) AIRSHIPS OWNED PRIVATELY.

But available for Government use.

15. Zeppelin ...	660,000	Stagel ...	268,000	Da Vinci ...	120,000
16. Do. ...	660,000	Estaric ...	24,000	Uselli ...	100,000
17. Parseval ...	282,000			Da Schio ...	50,000
18. Vech ...	282,000			Ansonia ...	50,000
19. Parseval ...	265,000				
20. Ruthenburg	140,000				
21. Parseval ...	113,000				
22. Clouth ...	65,000				
23. Parseval ...	63,500				
24. Do. ...	63,500				
	2,594,000		292,000		320,000

Combining these capacities for what they may be worth—and they at least indicate the measure of progress achieved—we find:—

Germany	...	24	airships of 8,896,000 cubic feet capacity.
Austria	...	8	1,453,400 " "
Italy	...	7	737,000 " "

Triple Alliance... 39 " 11,086,400 " "

These figures refer to completed airships and only approximately indicate the air-power of the Triple Alliance. Austria has at least one large rigid dirigible approaching completion, and the German Government is about to add four large airships to its fleet, namely, two large frameless Parsevals and two large partially rigid Gross. Moreover, the German Estimates of the present financial year provide almost £1,816,000 for the construction and acquisition of further aircraft. One big Zeppelin and five Parsevals are about to be added to the German Fleet by private owners. This will bring the total German Airship fleet to a minimum of 33 vessels during the year 1913.

TABLE B.—The Triple Entente.

FRANCE.		RUSSIA.		ENGLAND.	
Airship.	Capacity.	Airship.	Capacity.	Airship.	Capacity.
	c. ft.		c. ft.		c. ft.
1. S. Zodiac	406,000	Parseval	225,000	Delta	180,000
2. C.-Bayard	318,000	Lebaudy	220,000	Gamma	75,000
3. C.-Bayard	318,000	Astra II	220,000	Beta	33,000
4. Zodiac	318,000	Lebed	124,000	Willows	(small)
5. Astra	316,000	Astra I	123,000		
6. Astra	316,000	Outcheburg II	70,000		
7. Lebaudy	282,000	Zodiac I	70,000		
8. Lebaudy	265,000	Zodiac II	70,000		
9. Zodiac	212,000	Outcheburg	150,000		
10. Astra	212,000	Forzman I	28,250		
11. Military	209,000	Forzman II	21,000		
12. Lebaudy	169,500				
13. Astra	148,000				
14. Lebaudy	116,500				
15. Zodiac	88,000				
	3,694,000		1,221,250		288,000

In privately-owned machines France possesses two Astras, one C.-Bayard, one Zodiac, and one Torres, of an aggregate capacity of 798,000 cubic ft. Thus the present airship power of the Triple Entente stands:—

France	...	20	airships of 4,492,000 cubic feet capacity.
Russia	...	11	1,221,250 " "
England	...	4	288,000 " "

The French Government in the ensuing year propose to spend about one and a half million pounds sterling on aircraft, which will include a large number of airships. Four airships are nearing completion for the French Government, each having a capacity of about 600,000 cubic feet.

The Fleets of the Six Powers will therefore early in the present

AIRSHIP AND BALLOON NEWS.

The Zeppelin Catastrophe.

THE disaster to the Zeppelin airship "Ersatz Z1," on Wednesday week, once more emphasises the necessity of thoroughly instructing troops generally as to the control of an airship on the ground. Leaving Oos, near Baden-Baden, at 8 p.m. on Tuesday night, the airship cruised all night and arrived back at Oos the next day at 1 p.m. It was then impossible for the dirigible to enter her shed, as a gale was blowing across the door. An endeavour was made to land at Rastatt, but the ropes were torn out of the hands of the soldiers and the airship went before the wind to Carlsruhe. There a descent was effected at 3.40 p.m., and the airship was moored by the head with soldiers holding ropes to keep the vessel head to wind. The wind, however, suddenly changed, and a squall caught the side of the vessel, breaking the framework in two places. Efforts were made to rapidly deflate the ballonets, but the airship became a total wreck.

The New Astra Airship for Russia.

THE new Astra dirigible built for the Russian Government had a trial trip on the 18th inst., with 14 passengers, including five Russian officers. The airship cruised over Paris and St. Cloud for an hour and a quarter.

year have airships and capacities—making estimated allowance for ships to be added—as follows:—

Germany	...	32	airships of 11,696,000 cubic feet capacity.
Austria	...	8	1,453,000 " "
Italy	...	7	737,000 " "
Total	...	—	—
Triple Alliance	...	47	13,886,000 " "
France	...	24	6,892,000 " "
Russia	...	11	1,221,000 " "
England	...	4	288,000 " "
Total	...	—	—
Triple Entente	...	39	8,401,000 " "

No reliable inference can be drawn from these figures of relative striking and defence powers in war, but the comparison is not without interest as showing the deplorably backward condition of this country. Taking the hydrogen capacity of English airships as unit, German air power is 41 times; France, 24 times; Austria, six times; Russia, five times; and Italy, three times, as great as England.

7. It must not be forgotten, of course, that this country is to acquire this year, by favour of the German Government, one Parseval non-rigid airship of 350,000 cf. volume, and one non-rigid Astra-Torres of the same capacity, from France. It is expected further, that a rigid dirigible is under consideration. The delivery of these ships is uncertain, and their efficiency has to be proved. There is not a moment to be lost in making up for lost time, and the best brains and engineering skill in this nation should be encouraged to go to work with vigour with construction and experiment.

8. No progress has been made in this country in the equipment of airship stations. Germany possesses 21 thoroughly-equipped up-to-date airship stations, France ten, Italy five, and Great Britain only two.

9. Capital expenditure upon land for aerodromes and all incidental accommodation has been delayed almost to danger point, and the acquisition of land and the construction of hydrogen plants are of vital urgency.

10. Comparative power in aeroplanes is somewhat difficult, and relative strength at a future point of time almost impossible, owing to rapidity of construction, and the fact that the problem of securing an ample supply of approved engines has largely been solved on the Continent. Roughly, the figures for machines on the establishment may be taken:—

France, 585 completed.	Germany, 250 completed.
England, 50 completed.	

These figures, from the British point of view, are grievously to the disadvantage of this country.

11. In view of the foregoing facts, it is strongly urged that a sum of not less than £1,000,000 should be provided at once by Parliament to make a substantial beginning towards preparation for the aerial needs of this country. The expenditure of this sum may seem but a small provision for the future, but it is estimated that with universal backwardness in facilities for manufacture and organisation, the amount suggested will serve as a beginning.

(Here follows the estimate of useful expenditure of £1,161,000, in accordance with the figures given in the Navy League's Memorandum to the Prime Minister given above.)

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"Gamma" Over Windsor Castle.

DURING a cruise on Monday last the Army airship "Gamma" passed over Windsor Castle at a low altitude.

The "Beta" Visits Oxford.

THE "Beta," on Monday, cruised from South Farnborough to Oxford and back. After passing over the University city the dirigible circled over Port Meadow for a few minutes, and then disappeared at a fast pace in the direction of Aldershot.

New Italian Dirigible.

ON the 20th inst. at Milan, trials were commenced with a new dirigible, the "City of Milan," constructed by Forlanini.

A Record Balloon Trip.

AFTER travelling for over 40 hours and covering a distance of 1,500 miles, the balloon in which M. Rumpelmayer and Mme. Goldschmidt left Paris on Wednesday week, landed at Kharkoff, in the south of Russia, on Friday evening.

Ballooning Over London.

ON Monday last, Capt. Penfold, the Australian aeronaut, and Mr. A. E. Gaudron enjoyed a balloon trip across London. Starting from the Alexandra Palace at 4 p.m., the wind carried them in a south-westerly direction, and, as the balloon was kept at a height of 1,500 ft., Londoners had a good view of it. The aeronauts tried to get near Brooklands, but the wind dropped, and about 6 o'clock they effected a safe landing at Ockham.

FOREIGN AVIATION NEWS.

The Aero Club of France Committee.

To fill vacancies caused by resignations, MM. Maurice Bienaime and Armand Deperdussin have been elected members of the Committee of the Aero Club of France. M. Bechereau, the clever designer of the Deperdussin firm, has been elected a member of the Ae.C.F. Commission d'Aviation, as also has M. de la Fresnaye, technical director of the Nieuport Company.

The French Stability Competition.

THE Union for improving the security of aeroplanes has now issued the regulations for the competition for the prizes provided by the fund of £23,260, which has been collected. There will be a Grand Prix of £16,000 for the apparatus which is considered by the committee to be of exceptional merit from the point of view of improving the security of aeroplanes. Other prizes of not less than £800 will be awarded to other machines which possess some merit. The competition is international, but competitors must agree that if they secure a prize of not less than £2,000 they must give the French Government the option, up to January 1st, 1915, of purchasing the invention. To qualify for the Grand Prix, any apparatus must have been continuously employed during a flight of 100 kiloms. in a closed circuit and at a minimum speed of 60 k.p.h.

The Italian Aeroplane Competitions.

FOR the national military aeroplane competition, which is to be held in Italy at the beginning of April, 39 entries have been received. They are from the following firms:—Asteria (Turin), 4 machines; Caproni (Vizzola), 4; T. A. Milano (Milan), 4; Meccanica Lombarda, 3; Tonini-Bergonzi (Milan), 3; Wolsit (Legano), 3; Borba Cesare (Casalmonfer), 2; Chiribini (Turin), 2; Gabardini (Milan), 2; Macchi (Varese), 2; S.I.T. (Turin), 2; Castellani, 1. Among the pilots who are to be in charge of the machines are Perreyon, Espanet, Bobba, Maffei, &c.

Paris to Rheims on a Nieuport.

ON Good Friday, Lieut. de Montjou and a sapper on a Nieuport with 100-h.p. Gnome motor, went from Villacoublay to Rheims, while Sergeant Canal on a similar machine made a long trip over Buc, Chateaufort, St. Cyr, Palaiseau, Sceaux and back to Villacoublay.

Paris to the Sea.

LAST Saturday Guillaux on his Clerget Clement-Bayard started from Issy to fly to Pont l'Eveque but he had to land on account of the violent rain at Nantes. The next morning he resumed his journey and following the Risle valley completed the 150 kiloms. to his destination in good time. He afterwards was flying over Deauville and Trouville.

To Cross the St. Gothard Pass.

CHARLES FAVRE, the successful Hanriot pilot, has announced that he will shortly attempt to fly from Lucerne, over the Alps by the St. Gothard Pass, and continue his journey to Milan and Venice.

Legagneux at Amberieu.

ON the 18th inst., both Legagneux and Gilbert made trips from Amberieu to Lyon and back on their Rhone-engined Morane monoplanes. At times they were over 4,000 metres high.

New Deperdussin for French Army.

BEFORE a deputation of French army officers, Janoir, at Betheny, on the 17th, tested a two-seater Deperdussin with 70-h.p. Gnome motor, which has a new type of landing chassis. With a useful load of 275 kilogs., the machine easily fulfilled the military requirements regarding climbing, speed, and landing.

New Farman Superior Pilots.

LIEUT. BORDES and Sergeant Carrus completed their practical tests for superior certificates on the 19th inst. by flying from Buc to Mailly Camp and back on their M. Farman biplanes. The next day Lieuts. Rey and Villa went from Mourmelon to Douai on a 70-h.p. H. Farman.

Long Trip on a Deperdussin.

CAPT. AUBRY, who has been specially appointed by the French Minister of War to study new motors, on the 19th inst. flew on a Deperdussin with 50-h.p. Clerget motor from Rheims to Longwy, covering the 135 kiloms. in an hour and a half.

Fast Trips from Havre to Cherbourg.

FUGAIRON, on the 18th inst., flew from Havre to Cherbourg on his Breguet biplane, the distance of 135 kiloms., of which 120 kiloms. were over the sea, being covered in an hour and a quarter. During the greater part of the way he was at a height of 2,000 metres.

British Officers at Borel School.

TWO British naval officers, Capt. Risk and Lieut. Courtney are at the Borel School at Buc, where they are familiarising themselves with the Borel machines under the guidance of Daucourt.

More Farmans for the R.F.C.

ON the 18th inst., at Buc, Maurice Farman was testing a new machine of his design for the British Government, while last Saturday, Henry Farman and Fischer were putting two H. Farmans for the R.F.C. through their paces, although the wind and rain made the conditions anything but pleasant. On the 18th inst., a new H. Farman biplane arrived at South Farnborough, having been flown over from Hendon.

The Italian Motor Trials.

THREE motors out of the ten competing have survived the tests imposed in the competition for engines in connection with the Italian Military Aeroplane contests. They are a 10-cylinder S.P.A. of the Anzani type; an 8-cylinder V type F.I.A.T., and a Cavalcini rotary motor.

New Italian Height Record.

LAST week at the Avians aerodrome Lieut. de Giovanni, on a 70-h.p. Gnome-Blériot, went up to a height of 2,000 metres, and this was afterwards beaten by Lieut. de Carolis on a similar machine, who went up to 2,700 metres, thus creating a new Italian height record.

Two Italian Fatalities.

AFTER flying from Milan to Lugano in an hour and 25 mins. on the 19th inst., the Italian Primavesi fell from a height of 300 metres into Lake Lugano, near Cavalinno, and was drowned.

On the same day, the commander of the military school at Sommo Lombardo, Capt. Moreno, while making a *vol plane*, fell from a height of 200 metres, and was killed instantly.

Flying from Turin to Rome.

WITH the intention of flying to Rome on his Morane-Saulnier monoplane, Cevasco left Turin on the 20th inst. After flying for 1 hr. 38 mins., he made a good landing at Genoa.

Flying in Belgian Congo.

IT is claimed that the first flights in Central Africa have been made by Lescarts, the well-known Belgian Deperdussin pilot, at Katanga, in the Belgian Congo.

A Fatal Mishap at Scutari.

SERGEANT PETROVITCH attached to the Servian army besieging Scutari, met his death on the 21st inst. After making a trip over the besieged city, he was landing, when the biplane capsized, according to one account by reason of the steering gear having been damaged by the enemy's fire. The pilot was thrown out, and received injuries to which he succumbed.



A Storm Trip on a Short Biplane.

A REMARKABLY fine flight was made last Saturday on a Short biplane, piloted by Lieut. Gordon Bell—who seems to fly every known make of machine—with a mechanic as passenger. Gordon-Bell left Eastchurch at 2.45 p.m. in a high wind. A descent had to be made at Edmonton owing to engine trouble, and after a stop of 20 mins. a re-start was made, the machine rising to a height of about 1,500 ft. The wind had by now increased in violence, and the voyagers were driven lower and lower, so that by the time they reached Hendon aerodrome an altitude of only about 100 ft. remained. The total time taken for the journey was about 1 hr. 10 mins., which, allowing for the stop of 20 mins., works out at a speed of 70 m.p.h., an exceptionally good performance considering that the motor was only a 50-h.p. Gnome, and was not pulling very well. It was when the machine was about to be taken into one of the sheds later on in the afternoon that a strong gust of wind blew it over, rather badly damaging it.

A Mishap at Chesterfield.

ON Monday Mr. J. L. Hall gave a series of exhibition flights on his Blériot at Brampton, Chesterfield. At the end of his third trial, he was preparing to land, when he was forced to execute a sharp turn to escape fouling some trees. The ground was not very large, and in order to avoid running into the crowd, Mr. Hall had to make a very steep glide. The landing was too abrupt, however, with the result that the chassis was damaged and propeller smashed. Fortunately the pilot escaped unhurt.

Models

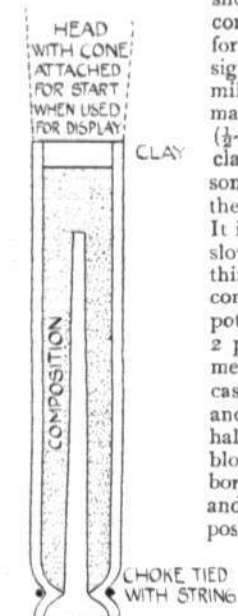
Edited by V. E. JOHNSON, M.A.

Rocket Planes.

A CORRESPONDENT, writing under the *nom de plume* of "Miles," says: "I have read with great interest your article on model aeroplanes, where a so-called rocket has been used as a means of propulsion. Your correspondent does not appear to have much knowledge of the construction of a rocket, which

should not have a grain of gunpowder in its composition. I have experimented with rockets for many years, and produced a system of signals, by means of high-flying rockets, for military purposes thirty-six years ago. I have made rockets in my laboratory from $\frac{3}{8}$ -in. bore ($\frac{1}{2}$ -oz.) up to a life-saving size, so that I may claim to know enough about them to speak with some authority. As you say in your article, there is a 'rush and all is over' after it is fired. It is quite true that the larger the rocket the slower and more graceful is its flight—but I think the speed is the chief difficulty. The composition I use for all sizes of rockets is potassium nitrate 8 parts, sulphur (flowers) 2 parts and a mixed charcoal 3.75 parts—fine, medium, and for large rockets, coarse. A choked case is fixed on a steel spindle, slightly tapered, and the composition firmly consolidated about half an inch at a time, with about 20 moderate blows of a mallet, the rammers used being bored to receive the spindle at different heights, and a solid one for a diameter of solid composition above the spindle. The rocket does

not necessarily explode when the composition is consumed; only when decorations are necessary to be displayed, in the case of an aeroplane, the composition would be finished off with a stopping of dry powdered clay, hard-driven for about half a diameter, or by a close-fitting wooden-plug glued in. When the



"Flight" Copyright.
Vertical section of a rocket.

rocket leaves the tube of its flight is only a few seconds, 5 to 7, according to strength of composition. This rapidity of flight seems to be the drawback to its use. The rocket being hollow for three-quarters or so of its length, there is a large area of composition burning at one time, and the 'rush' is, therefore, violent. I shall be glad to give any assistance in my power in arriving at a successful attempt in this direction. I may add that one of my $\frac{1}{2}$ -lb. signal rockets has a flight of about 1,000 ft., diameter of bore being 1 in. and length of case 8.25 ins."

Our correspondent, in reply to a request for some composition which should give some more lasting result, not of necessity on the principle of the rocket, writes us as follows: "I would recommend an experiment with a wheel-case, such as gives motive power to pyrotechnic wheels, 3 ft. to 4 ft. in diameter, composition fitted solid as follows: Potass. nitrate 2 parts, sulphur (flowers) $1\frac{1}{2}$ parts, mixed

charcoal, fine and medium, 1 part, meal powder 9 parts. The smaller the case, which should be strong and choked to one-third diameter of bore, the stronger the composition. The above formula should suit cases $\frac{3}{8}$ -in. or $\frac{1}{2}$ -in. in bore and about 7 $\frac{1}{2}$ ins. long. The composition would burn about 30 secs."

Mr. L. H. Slatter's Models.

We give this week some photos and particulars of the above models—one of which won the first prize for r.o.g. models at Hendon, and the other—a hydro-aeroplane—was third in the contest at the Welsh Harp.

The *self-rising monoplane* is 3 ft. 9 ins. long; span, 33 ins.; total area, 180 sq. ins.; weight, 8 $\frac{1}{2}$ ozs. Driven by two 9-in. diameter propellers, 16-in. pitch, and 8 strands of $\frac{3}{16}$ -in. rubber weighing 2 ozs. The chassis is of steel wire and therefore almost unbreakable, and offers minimum head resistance.

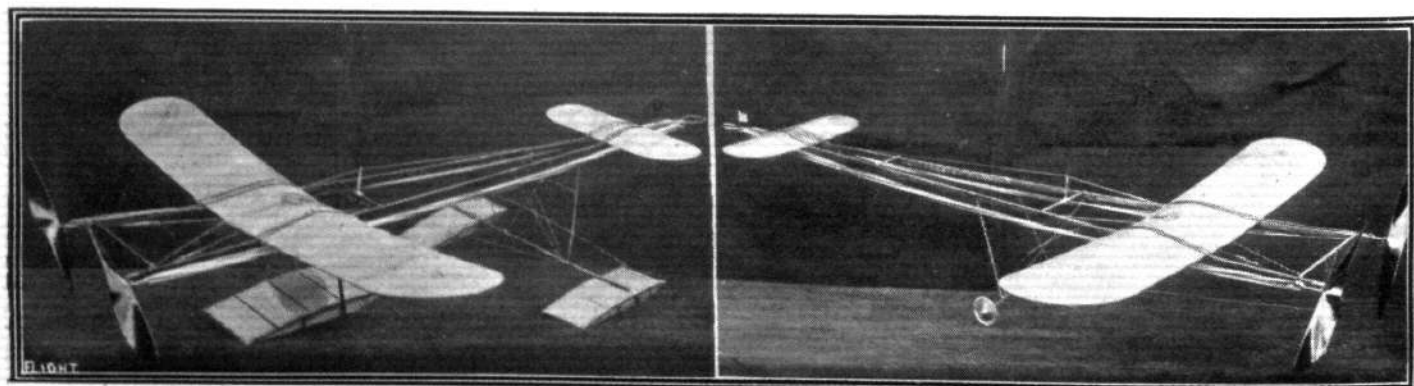
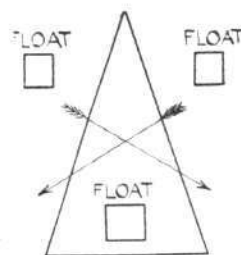
Hydro-aeroplane.—Length, 3 ft. 3 ins.; span, 33 ins.; total area, 180 sq. ins.; weight, 8 $\frac{1}{2}$ ozs. Driven by two 8.5-in. diameter propellers, 16-in. pitch, and 8 strands of $\frac{3}{16}$ -in. rubber weighing 1 $\frac{3}{4}$ ozs. Here, again, steel wire is used for the chassis. The floats passed quite successfully through the show at Olympia, and the competition, so far as their "watertightness" is concerned. Their framework is bamboo, and the covering Bragg-Smith silk. Bamboo is also used for the planes, the propellers are carved from the solid. The fault of the bad circling of the model at the competition was due to the fact that in my first flight I landed in a tree, and on getting it down I wrenched off one of the floats, and being unable to mend it properly, there was increased resistance on one side. Further, using two floats in front and one at the rear, no amount of increased flotation base will prevent the model upsetting in a strong gusty wind, for it does not turn over sideways but in either of the two directions shown by the arrows in the figure.

Nevertheless, I believe I was the only one to alight properly and remain in the proper attitude on the water—which happened when I flew from the boat.

Re your remarks on trial flights—a rule stated no trial flights to be made on the ground—hence my two first flights in the r.o.g. competition were the first my machine had ever done, since it was made just prior to the opening of the show, and as I had glided it only the result was that I was under-elevated for the first two flights—but was so fortunate as to rectify it correctly for the third.

Whereas Mr. Slatter's hydro-aeroplane is, like Mr. Williams', of the monoplane type, it should be noted that the floats, when the model is in actual flight, act as fairly efficient lifting surfaces, and thus fulfil one of the essential features of a good float, viz., that it should support at least its own weight while in the air.

Referring to Mr. Slatter's remarks on flotation stability, it will be noticed that in general, when the number of floats used is three, and they are disposed about the apexes of a triangular base, there

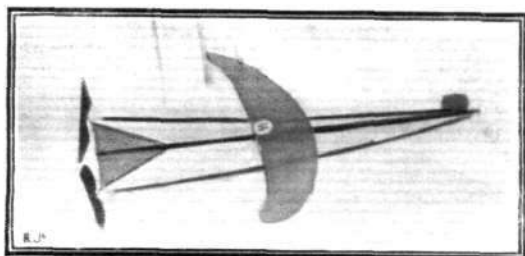


MR. SLATTER'S MODELS.—On the right his r.o.g. monoplane, winner of the first prize for Olympia models at Hendon and on the left Mr. Slatter's model hydro-aeroplane.

is a lack of flotation stability. The most favourable case is when the weight is largely concentrated about the base of the triangle, as in a power-driven model of the tractor type. Apart altogether from the question of stability, the rubber-driven models in general use (weighing as they do not more than a pound) are so light that they are quite easily, in a gusty wind, blown right out of the water, and naturally capsize.

Mr. H. H. Groves' Burst Boiler.

Having cut out the piece of steel tubing containing the burst, Mr. Groves has sent the same along for our inspection. None of the tubing seems actually to have been broken off—but the outer wall of the tubing has "blown" out just like a glass tube bursts while blowing out when heated; apart from this outer wall there is also an inner lining or section which seems crystallized and very brittle. The piece of tube was in the hottest part of the flame and near the steam end. On taking the plant to pieces to fit a new boiler—one of the tubes from the valve chest to the cylinders gave out and on examination—it was found that a crack had evidently been there for



Mr. C. Houlberg's model, winner of hand-launched contest of Olympia models at Hendon, from a photo by Mr. V. Smith.

some time as the surface of the fracture was black for half the circumference of the tube.

Having fitted a new boiler and the damage referred, on running the plant one of the pistons broke up. This was repaired, and then one of the pins, which holds the crankcase cover on, came out. As Mr. Groves says, it is remarkable that all the parts gave out practically speaking at the same time, like the "one horse chaise," where every part was of equal strength, and after many years it collapsed all over at once. This particular plant is the one with which Mr. Groves has done practically all his experimenting, and that it should have endured so long clearly proves that there is nothing against this type of plant so far as shortness of life is concerned. Moreover, in later plants, thicker steel tubing and additional strength in other parts have been employed.

Model Club for Northampton.

Mr. N. J. Dudley (35, Louise Road, Northampton) will be glad to hear from anyone living in that district, with a view to forming

a model club there. "I know for a fact," says Mr. Dudley, "that there are a large number who take in FLIGHT regularly."

Flight Golf for Paper Models.

A correspondent writes us as follows: "A year or so ago the game of flight golf was suggested in these columns to be played in the open with model aeroplanes. I wonder if anyone has tried the game in doors with paper gliders. Quite an instructive and interesting game may be played in this manner:—Each player is given half a sheet of stiff notepaper, and makes a glider to suit his own particular notion, and then the game begins. Each player launches his model in turn, and endeavours to make it 'land' on certain prescribed articles of furniture with the minimum number of flights. If it is desired to elaborate the game, it can be carried on through a number of rooms, or even up and down stairs, the numerous turns calling for considerable skill on the part of the operator in setting the rudder and warping the wings of the model. A small metal clip makes a very good weight for balancing purposes, as it can be slid backwards and forwards for balancing purposes, or duplicated, &c., if necessary.

"Another amusing competition is the 'landing test.' This consists of a circular paper target, say 9 ins. in diameter, upon which the competitors have to land their models from some specified distance. The player getting his model nearest the target in a given round scores 'one,' if it touches the target, 'two,' and if he lands clean on it, 'three.'"

There is no doubt that both considerable instruction as well as sport and amusement can be learnt from the above. The game appears to us to be quite as well, or even better, suited for paper gliders indoors than with model aeroplanes out in the open, i.e., so far at any rate as one particular is concerned, viz., the alighting on some prescribed area. If we substitute for this a minimum number of flights between two places, say A and B, two or three miles apart, then a cross-country contest of this kind is about the most sportive that we know, especially if there be a number of tall trees in the neighbourhood. Each competitor is obviously accompanied by an observer, and in the case of landing in a tree, the next flight commences from the bottom thereof.

Replies in Brief.

G. A. PEACHE.—In reply to both your queries consult Mr. H. H. Groves, 18, Westerdale Road, East Greenwich, S.E.

G. E. MAYO SMITH.—The results of the Aero Club's competition at Hendon are given in FLIGHT, issue March 8th. We cannot supply any further information than that contained therein. We do not at all agree with your remarks as to the model you mention being rather of the flying stick type—we think the design of the model extremely good, and this opinion is shared by many others.



MODEL CLUB DIARY AND REPORTS.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY). FLYING will take place this week-end at Blackheath, Mitcham, Kidbrooke, and Lee; times as usual.



CORRESPONDENCE.

. The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in FLIGHT, would much facilitate ready reference by quoting the number of each letter.

The Wildeblood Patent.

[1744] Referring to Mr. Mervyn O'Gorman's notice of my invention (No. 11,334 of 7th May, 1910) in his lecture on stability devices for aeroplanes before the Aeronautical Society on January 29th, will you allow me to say that, so far as it goes, the criticism regarding the possibility of trouble from the invention during a side-slip is a perfectly just and useful one. Mr. O'Gorman, after briefly outlining my invention No. 11,334 of 1910 for "automatic lateral balancing planes situated on both sides of an aeroplane and having their outer edges rigid and the planes being otherwise flexible or movable in both upward and downward direction to a limited extent," says "if, however, side-slip occurs towards the left side, the right flap is raised and catches the air as before, thereby precipitating the catastrophe by increasing the lateral slope." Since the invention has for its object the maintenance of the lateral attitude of the aeroplane in right or left wind lines, it is perfectly true that if a decided side-slip were to be thoroughly established, the method referred to would tend to keep the aeroplane on its side-slip course, provided there is no wind blowing at the time. As a fact, however, the arrangement tends to prevent the establishment

of a side-slip, especially when a wind is blowing, and we know that a dead calm is a very rare occurrence and that the calmer the air the less danger there is of a side-slip due to the upsetting action of a side wind. The tendency to side-slip in present-day machines is, I believe, largely due to the use of the prevalent system of lateral control, which consists of the warping of planes or ailerons held at a positive angle to the relative wind, combined with a movement of the rudder to overcome the difficulty, imparted by the former manœuvre, of a consequent back drag on the wrong, i.e., the lower, side of the aeroplane. This tendency to side-slip may be overcome by the adoption of negative angle balancing planes, worked independently, which it was the object of my invention No. 6642 of 16th March 1910, to introduce, and which has received the support of the technical editor of FLIGHT, and other writers, and in Dr. Hankin's observations of bird flight in India. There are other methods of preventing side-slip such as a high fin, though this has the disadvantage of presenting a target to a side wind gust. But it is, I think, fairly certain that within a very short time an aeroplane will be evolved which cannot develop a dangerous side-slip any more than a bird can. Assuming, however, that I am wrong in this supposition, it would be a perfectly simple matter to throw my lateral wing tip feathers, with their outer quills and their inner flexible planes, out of action in the unusual event of a side-slip, and oddly enough I had recently anticipated the possible objection and designed a method of not only doing this, but of

bringing a righting action against established side-slip into play. The method consisted merely of pulling down the inner edges of both flexible lateral planes so as to form a dihedral angle between them. This would provide a righting pressure under the lower and above the higher wing during a side-slip. It might be tried at least during the experimental stage on full-sized machines, but I doubt if it will be necessary to permanently retain it.

There is another objection which may be raised to any form of device which aims at keeping an aeroplane in the wind lines, namely, that it may not always be desirable to do so, but it is impossible for strong winds to blow straight out of the earth, and the nearer we approach the earth, and the stronger the wind, the more likely we are to find the wind blowing horizontally over the earth at a flat landing-place. As for obstacles on the earth's surface, the action of such devices in the natural trend of the wind over the obstacles should help us to avoid them by keeping us in the wind lines.

We may, moreover, I think, assume that principles which the birds have acquired in their natural evolution will prove useful in the evolution of the aeroplane, and we should not condemn these principles because they would fail if a bird or aeroplane were to slide sideways or backwards. It is our duty to provide against either of these contingencies taking place.

At the present moment, however, the reform most urgently needed in the design of the aeroplane is the entire abolition of the present system of lateral control by means of positive angle balancing planes and the substitution of negative angle lateral balancers. The flexible trailing wing tip feathers with their outer quills may follow as a means of giving extra stability, but our first duty is to remove the glaring defect of the use of the positive angle in any form whatsoever in lateral balancing.

Meerut, India, February 28th.

H. S. WILDEBLOOD.

Tuition.

[1745] One way to remedy the "tuition trouble" in this country would be to lower the tuition fee, and further, to charge the breakage to the ("to be or not to be") pilot. Then he will be allowed to pass from the grass-cutter much quicker, let me say after his "second straight." This system (used in America) will prove more practical both to the school and to the able pupil.

As for the dual system, I agree with Mr. Turner's view: "it robs the pupil of that self-confidence which is so necessary."

This has been my experience as an instructor in America, where a pilot licence is generally obtained in a month's tuition, and the weather conditions are less favourable than here.

AMERICAN MONOPLANE PILOT

Harrow.

(in England).

High-Speed Birds.

[1746] In your issue of January 4th, I noticed a query from Mr. A. H. Ford-Moore (letter 1701) asking your readers for information as to which is the fastest bird. Since Mr. Ford-Moore has gone without answer for so long, I would take the liberty of saying that among sea-faring men the frigate bird—otherwise known as "man-o'-war pelican," &c.—is regarded as the fleetest of all winged creatures, speeds of about 200 m.p.h. for long-sustained flights being freely claimed for it; and, besides, the exceptional grace of their flight is very impressive. But there are certain varieties of the hawk family, especially those whose especial prey is other birds, who themselves are very swift flyers, and these tigers of the air on occasion develop speeds much higher than even the frigate bird. It is these that I would especially commend to Mr. Ford-Moore for consideration in connection with his aviation plans; for having comparatively small wing area, rather low aspect ratio, and exceptionally good weight-carrying capacity, they are designed most especially for extreme speed with unusually high physical strength.

Chicago.

J. B. McQUEENY.

Stream-line Bodies.

[1747] Mr. M. L. Robinson, in his letter (1705), states that we wander completely off the "point" by taking water and solids as examples, and we are asked to read a letter (1671) which only concerning water states nothing about air. Besides is your correspondent sure that torpedoes are now made with round fronts with the object of increased speed? Is he sure that these craft are not made after this form in order to facilitate steering?

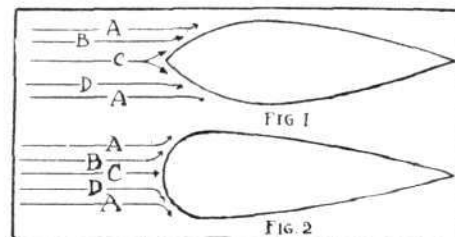
We did not intend, by saying that battleships have pointed bows, to convey to your correspondent the idea that they are as sharp as a razor. According to his own statements all points are "slightly curved."

If Mr. Robinson can account for the pointed springs and pointed starting-handle of Mr. P. Lambert's Vauxhall, then shall we be

pleased to account for the shape of the Deperdussin monocoque, the Breguet struts, and other examples of rounded fronts quoted by him.

Your correspondent's, Mr. W. H. Norton (1706), diagrams appear to us very misleading, as we disagree with the arrows indicating the course of the air currents. In our opinion a pointed front cuts the air, as in Fig. 1. A rounded front hits it, as in Fig. 2, causing far more wind resistance. In Fig. 1 the air currents, C, being split by the pointed front, are divided equally, and thus carry with them air currents, B, D, which also carry away currents, A, &c., thus the only direct head wind resistance is that at the very point of the stream-line body; therefore the finer the point the less wind-resistance.

A curve is but a blunt point. In Fig. 2 the air currents, C, hit the round in the centre, and continue to offer resistance. The currents, B and D, are guided by the round and help to carry away, A, &c., but these currents, B and D, are not guided sideways so quickly as in Fig. 1, therefore they offer more resistance. In Fig. 2, the most



important place where the wind resistance is not wanted, i.e., the head or middle of the front of the body, is most subject to this resistance.

Your correspondents may argue that the part where currents, C, in Fig. 2, strike the body is round, and so they are split up in both directions, as in Fig. 1, but is it not more easy to split up anything with a point than with a "round"?

Your correspondent states that in his Fig. 2 the air currents are "smashed." To us this conveys an idea of enormous resistance. In his Fig. 1 they are divided by a point.

We are most interested in this subject, and should like to hear more about it, if we are not trespassing on too much of your valuable space.

F. ROBINSON.

K. L. KELLER.

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